11-6-08	CTO1	GP-1	prescreen-Class I HH
11-6-08	GRØ1		Accept I, R441 Permit.
11-12-08	GRØ1	ADØ1	R441 PC-PO Recom.
2-19-09	ADØ1	CTØ1	Approve R441 HH

REFERENCE TO OTHER APCD RECORDS INCLUDING VARIANCES

G1548

(B014)

APPL # 491468
I. D. # 17301

ORANGE COUNTY SANITATION DISTRICT
10844 ELLIS AVE
FOUNTAIN VALLEY
FUEL CELL ENERGY STN

Date: 10/30/08

South Coast Air Quality Management District

Form 400-A
Application For Permit To Construct and Permit To Operate

Mail Application To:
P.O. Box 4944
Diamond Bar, CA 91765

Tel: (909) 396-3385
www.aqmd.gov

Section A: Operator Information

1. Business Name of Operator To Appear On The Permit:
Orange County Sanitation District

2. Valid AQMD Facility ID (Available on Permit or Invoice issued by AQMD): 017301

3. Owner's Business Name (only if different from Business Name of Operator):

Section B: Equipment Location

4. Equipment Location Address:
For equipment operated at various locations in AQMD's jurisdiction, provide address of initial site

10844 Ellis Avenue
Street Address

Fountain Valley, CA, 92708 - 7018
City, State, Zip Code

County: ○ Los Angeles ◉ Orange ○ San Bernardino ○ Riverside

Contact Name: Terry Ahn

Contact Title: Regulatory Specialist Phone: (714) 593-7082

Fax: (714) 962-8379 E-Mail: vkogan@ocsd.com

Section C: Permit Mailing Address

5. Permit and Correspondence Information:
☒ Check here if same as equipment location address

Street Address

City, State, Zip Code

Contact Name:

Contact Title: Phone:

Fax: E-Mail:

* PO Box to OK per ltr. dated 10/23

Section D: Application Type

The facility is in ○ RECLAIM ○ Title V ○ RECLAIM & Title V Program (please check if applicable)

6. Reason for Submitting Application (Select only ONE):

- ◉ New Construction (Permit to Construct) (W)
- ○ Equipment Operating Without A Permit or Expired Permit*
- ○ Administrative Change
- ○ Equipment On-Site But Not Constructed or Operational
- ○ Title V Application (Initial, Revisions, Modifications, etc.)
- ○ Compliance Plan
- ○ Facility Permit Amendment
- ○ Registration/Certification
- ○ Streamlined Standard Permit
- ○ Permitted Equipment Altered/ Modified Without Permit Approval*
- ○ Proposed Alteration/Modification to Permitted Equipment
- ○ Change of Condition For Permit To Operate
- ○ Change of Condition For Permit To Construct
- ○ Change of Location—Moving to New Site

Existing Or Previous Permit/Application Number:
(If you checked any of the items in this column, you MUST provide a existing Permit/ Application Number)

* A Higher Permit Processing Fee applies to those items with an asterisk (Rule 301 (c) (1) (D)

7. Estimated Start Date of Operation/Construction (MM/DD/YYYY): 03/31/2009

8. Description of Equipment:
Temporary Fuel Cell Energy Station Consisting of Fuel Pretreatment Skid; FuelCell Energy Direct Fuel Cell Model DFC300MA; and Hydrogen Recovery Unit

9. Is this equipment portable AND will it be operated at different locations within AQMD's jurisdiction? ◉ No ○ Yes

10. For Identical equipment, how many additional applications are being submitted with this application? (Form 400-A required for each)

11. Are you a Small Business as per AQMD's Rule 102 definition? (10 employees or less and total gross receipts are $500,000 or less, or a not-for-profit training center?) ◉ No ○ Yes

12. Has a Notice of Violation (NOV) or a Notice To Comply (NC) been issued for this equipment?
◉ No ○ Yes If yes, provide NOV/NC #:

Section E: Facility Business Information

13. What type of business is being conducted at this equipment location?
Municipal Wastewater Treatment

14. What is your businesses primary NAICS Code (North American Industrial Classification System)? 221320

15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator? ○ No ◉ Yes

16. Are there any schools (K-12) within a 1000-ft. radius of the equipment physical location? ◉ No ○ Yes

Section F: Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application is true and correct.

17. Signature of Responsible Official:
Michael D Moore

18. Title:
Manager, ECRA

19. Print Name:
Mike D. Moore

20. Date:
10/24/08

Check List

- ☐ Form(s) signed and dated by authorized official
- ☐ Supplemental Equipment Form (400-E-XX or 400-E-GEN)
- ☐ CEQA Form (400-CEQA) attached
- ☐ Payment for permit processing fee attached

Your application will be rejected if any of the above items are missing.

AQMD USE ONLY	APPLICATION/TRACKING #	TYPE	EQUIPMENT CATEGORY CODE:	FEE SCHEDULE	VALIDATION
	491468	(B) C D	999993	$4867.37 C	10/30/08

ENG. DATE	ENG. DATE	CLASS	ASSIGNMENT Unit / Engineer	CHECK/MONEY ORDER	AMOUNT	Tracking #
A R 11-6-08	A R	(I) III IV	A	1000015703	4867.37	

(15630)

R301 XPP

South Coast Air Quality Management District

Form 400-CEQA

California Environmental Quality Act (CEQA) Applicability

Mail Application To:
P.O. Box 4944
Diamond Bar, CA 91765

Tel: (909) 396-3385

www.aqmd.gov

The SCAQMD is required by state law, the California Environmental Quality Act (CEQA), to review discretionary permit project applications for potential air quality and other environmental impacts. This form is a screening tool to assist the SCAQMD in clarifying whether or not the project[1] has the potential to generate significant adverse environmental impacts that might require preparation of a CEQA document [CEQA Guidelines §15060(a)].[2] Refer to the attached instructions for guidance in completing this form.[3] For each Form 400-A application, also complete and submit one Form 400-CEQA. If submitting multiple Form 400-A applications for the same project at the same time, only one 400-CEQA form is necessary for the entire project. If you need assistance completing this form, contact Lori Inga at (909) 396-3109.

FACILITY INFORMATION

Business Name of Operator to Appear on the Permit:	Facility ID (6-Digit):
Orange County Sanitation District	017301

Project Description:

Installation of Temporary 300KW Fuel Cell Energy Station with Hydrogen Recovery Unit

REVIEW FOR EXEMPTION FROM FURTHER CEQA ACTION

Check "Yes" or "No" as applicable

	Yes	No	Is this application for:
A.	◉	○	**A CEQA and/or NEPA document previously or currently prepared that specifically evaluates this project?** If yes, a permit cannot be issued until a Final CEQA document and Notice of Determination is submitted.
B.	○	◉	**A request for a change of permittee only (without equipment modifications)?**
C.	○	◉	**Equipment certification or equipment registration** (qualifies for Rule 222)?
D.	○	◉	**A functionally identical permit unit replacement with no increase in rating or emissions?**
E.	○	◉	**A change of daily VOC permit limit to a monthly VOC permit limit?**
F.	○	◉	**Equipment damaged as a result of a disaster during state of emergency?**
G.	○	◉	**A Title V** (i.e., Regulation XXX) **permit renewal (without equipment modifications)?**
H.	○	◉	**A Title V administrative permit revision?**
I.	○	◉	**The conversion of an existing permit into an initial Title V permit?**

If "Yes" is checked for any question above, your application does not require additional evaluation for CEQA applicability. Skip to page 2, "SIGNATURES" and sign and date this form.

REVIEW OF IMPACTS WHICH MAY TRIGGER CEQA

Complete Sections I-VI by checking "Yes" or "No" as applicable. To avoid delays in processing your application(s), explain all "Yes" responses on a separate sheet and attach it to this form.

	Yes	No	Section I – General
1.	○	○	**Has this project generated any known public controversy regarding potential adverse impacts that may be generated by the project?** Controversy may be construed as concerns raised by local groups at public meetings; adverse media attention such as negative articles in newspapers or other periodical publications, local news programs, environmental justice issues, etc.
2.	○	○	**Is this project part of a larger project?**
			Section II – Air Quality
3.	○	○	**Will there be any demolition, excavating, and/or grading construction activities that encompass an area exceeding 20,000 square feet?**
4.	○	○	**Does this project include the open outdoor storage of dry bulk solid materials that could generate dust?** If Yes, include a plot plan with the application package.

[1] A "project" means the whole of an action which has a potential for resulting in physical change to the environment, including construction activities, clearing or grading of land, improvements to existing structures, and activities or equipment involving the issuance of a permit. For example, a project might include installation of a new, or modification of an existing internal combustion engine, dry-cleaning facility, boiler, gas turbine, spray coating booth, solvent cleaning tank, etc.

[2] To download the CEQA guidelines, visit http://ceres.ca.gov/env_law/state.html.

[3] To download this form and the Instructions, visit http://www.aqmd.gov/ceqa or http://www.aqmd.gov/permit

	Yes	No	
5.	○	○	**Would this project result in noticeable off-site odors from activities that may not be subject to SCAQMD permit requirements?** For example, compost materials or other types of greenwaste (i.e., lawn clippings, tree trimmings, etc.) have the potential to generate odor complaints subject to Rule 402 – Nuisance.
6.	○	○	**Does this project cause an increase of emissions from marine vessels, trains and/or airplanes?**
7.	○	○	**Will the proposed project increase the QUANTITY of hazardous materials stored aboveground onsite or transported by mobile vehicle to or from the site by greater than or equal to the amounts associated with each compound on the attached Table 1?[4]**
			Section III – Water Resources
8.	○	○	**Will the project increase demand for water at the facility by more than 5,000,000 gallons per day?** The following examples identify some, but not all, types of projects that may result in a "yes" answer to this question: 1) projects that generate steam; 2) projects that use water as part of the air pollution control equipment; 3) projects that require water as part of the production process; 4) projects that require new or expansion of existing sewage treatment facilities; 5) projects where water demand exceeds the capacity of the local water purveyor to supply sufficient water for the project; and 6) projects that require new or expansion of existing water supply facilities.
9.	○	○	**Will the project require construction of new water conveyance infrastructure?** Examples of such projects are when water demands exceed the capacity of the local water purveyor to supply sufficient water for the project, or require new or modified sewage treatment facilities such that the project requires new water lines, sewage lines, sewage hook-ups, etc.
			Section IV – Transportation/Circulation
10.			**Will the project result in** (Check all that apply):
	○	○	**a. the need for more than 350 new employees?**
	○	○	**b. an increase in heavy-duty transport truck traffic to and/or from the facility by more than 350 truck round-trips per day?**
	○	○	**c. increase customer traffic by more than 700 visits per day?**
			Section V – Noise
11.	○	○	**Will the project include equipment that will generate noise GREATER THAN 90 decibels (dB) at the property line?**
			Section VI – Public Services
12.			**Will the project create a permanent need for new or additional public services in any of the following areas** (Check all that apply):
	○	○	**a. Solid waste disposal?** Check "No" if the projected potential amount of wastes generated by the project is less than five tons per day.
	○	○	**b. Hazardous waste disposal?** Check "No" if the projected potential amount of hazardous wastes generated by the project is less than 42 cubic yards per day (or equivalent in pounds).

REMINDER: For each "Yes" checked in the sections above, attach all pertinent information including but not limited to estimated quantities, volumes, weights, etc.

SIGNATURES

I HEREBY CERTIFY THAT ALL INFORMATION CONTAINED HEREIN AND INFORMATION SUBMITTED WITH THIS APPLICATION IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE. I UNDERSTAND THAT THIS FORM IS A SCREENING TOOL AND THAT THE SCAQMD RESERVES THE RIGHT TO CONSIDER OTHER PERTINENT INFORMATION IN DETERMINING CEQA APPLICABILITY.

SIGNATURE OF RESPONSIBLE OFFICIAL OF FIRM:	TITLE OF RESPONSIBLE OFFICIAL OF FIRM:	
Michael D. Moore	Manager, ECRA	
TYPE OR PRINT NAME OF RESPONSIBLE OFFICIAL OF FIRM:	RESPONSIBLE OFFICIAL'S TELEPHONE NUMBER:	DATE Signed:
Mike D. Moore	(714) 5937-450	
SIGNATURE OF PREPARER, IF PREPARED BY PERSON OTHER THAN RESPONSIBLE OFFICIAL OF FIRM:	TITLE OF PREPARER:	
Terry Ahn	Regulatory Specialist	
TYPE OR PRINT NAME OF PREPARER:	PREPARER'S TELEPHONE NUMBER:	DATE Signed:
Terry Ahn	(714) 5937-082	10/23/08

THIS CONCLUDES FORM 400-CEQA. INCLUDE THIS FORM AND THE ATTACHMENTS WITH FORM 400-A.

[4] Table 1 – Regulated Substances List and Threshold Quantities for Accidental Release Prevention can be found in the Instructions for Form 400-CEQA.

South Coast Air Quality Management District

FORM 400-PS
PLOT PLAN AND STACK INFORMATION FORM

Mail Application To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765
Tel: (909) 396-3385
www.aqmd.gov

This form must be accompanied by a completed Application for a Permit to Construct/Operate -Form 400A and Form 400-CEQA

Permit to be issued to (Business name of operator to appear on permit):
Orange County Sanitation District

Address where the equipment will be operated (for equipment which will be moved to various location in AQMD's jurisdiction, please list the initial location site):
10844 Ellis Avenue, Fountain Valley, CA 92708 (•) Fixed Location ( ) Various Locations

SECTION A: LOCATION DATA

Plot Plan
Please attach a site map for the project. Identify and locate the proposed equipment on the property. A copy of the appropriate Thomas Brothers page that shows the location, or a drawing or sketch that show the major street and identifies the location of the equipment is acceptable.

Location of School Nearby
Is the facility located within a 1/4 mile radius (1,320 feet) of the outer boundary of a school?
( ) Yes (•) No. If yes, please provide name(s) of school(s) below.

School Name	School Address	Distance from stack or equipment vent to the outer boundary of the school.

Note: Per Section 42301.9 of the California Health and Safety Code, a "school" means any public or private school used for purposes of the education of more than 12 children in kindergarten or any of grades 1 to 12, inclusive, but does not include any private school in which education is primarily conducted in

Population Density
(•) Urban (area of dense population) ( ) Rural (area of sparse population)

Zoning Classification
(•) Mixed Use Residential Commercial Zone (M-U) ( ) Service and Professional Zone (C-S) ( ) Medium Commercial (C-3)
( ) Heavy Commercial (C-4) ( ) Commercial Manufacturing (C-M)

SECTION B: EMISSION RELEASE PARAMETERS -STACKS, VENTS

Stack Data
Stack Height: 15.25 feet (height above ground level)* What is the height of the closest building nearest the stack ? 30.00 feet
Stack Inside Diameter: 8.000 inches Stack Flow: 900.000 acfm Stack Temperature: 750.00 °F
Rain Cap Present: ( ) Yes (•) No Stack Orientation: (•) Vertical ( ) Horizontal
* If the stack height is less than 2.5 times the closest building height (H), please provide information on any building within 5xH distance from the stack(attach additional sheet if necessary

Building #/name:	Building #/name:
Belt Press Bldg. M	
Building Height: 30.00 feet	Building Height: feet
Building Width: 78.00 feet	Building Width: feet
Building Length: 90.00 feet	Building Length: feet

Receptor Distance from equipment stack or roof vents/openings
Distance to nearest residence feet or 280.00 meters Distance to nearest business feet or 380.00 meters

Building Information
Are the emissions released from vents and/or openings from the building? ( ) Yes (•) No
If yes, please provide:
Building height above ground level: ft. Building dimensions: length ft. width ft. or Total square footage of building where the source of the emissions is located.

SECTION C: APPLICANT CERTIFICATION STATEMENT

I hereby certify that all information contained herein and information submitted with this application is true and correct.

SIGNATURE OF PREPARER:	TITLE OF PREPARER:	PREPARER'S TELEPHONE NUMBER: (714) 593-7082
	Regulatory Specialist	PREPARER'S E-MAIL ADDRESS: tahn@ocsd.com

CONTACT PERSON FOR INFORMATION ON THIS EQUIPMENT:	CONTACT PERSON'S	DATE SIGNED:
Terry Ahn	TELEPHONE NUMBER: (714) 593-7082	10/23/08
E-MAIL ADDRESS: tahn@ocsd.com	FAX NUMBER: (714) 962-8379	

CONFIDENTIAL INFORMATION

Under the California Public Records Act, all information in your permit application will be considered a matter of public record and may be disclosed to a third party. If you wish to keep certain items as confidential, please complete the following steps:
(a) Make a copy of any page containing confidential information blanked out. Label this page "public copy."
(b) Label the original page "confidential." Circle all confidential items on the page.
(c) Prepare a written justification for the confidentiality of each confidential item. Append this to the confidential copy.

South Coast Air Quality Management District
P. O. Box 4944 Diamond Bar, CA 91765
(909) 396-2000

EXPRESS PERMIT PROCESSING REQUEST FORM
FORM 400 - XPP

Form 400-A, Form 400-CEQA and one or more 400-E-xx form(s) must accompany all submittals.

Print Form

Section I - Facility/Application Information

1. Business Name: Orange County Sanitation District Facility ID: 17,301
2. The requested application is for a(n): Date of Occurrence: Mar 31, 2009
   a. [X] New Construction b. [ ] Change of Location
   c. [ ] Modification of Equipment/Process d. [ ] Existing Equipment with Expired Permit
   e. [ ] Existing Equipment Operating without a Permit; Initial Operation Date:
   f. [ ] Change of Condition(s); specify the change of condition(s) requested:
   g. [ ] Change of Operator; List previous name of operator and Facility ID #:
3. I hereby request Express Permit Processing for this application.
4. I understand that this request will incur additional fees.
5. This request is not cancelable once engineering review has been initiated.
6. Express Permit Processing neither guarantees action by any specific date nor does I guarantee permit approval.

Section II - Equipment Information

I HEREBY CERTIFY THAT ALL INFORMATION CONTAINED HEREIN AND INFORMATION SUBMITTED WITH THIS APPLICATION IS TRUE AND CORRECT.

SIGNATURE OF RESPONSIBLE OFFICIAL OF FIRM:	TITLE OF RESPONSIBLE OFFICIAL OF FIRM:	
Michael M. Moore	Manager, ECRA	10-24-08
TYPE OR PRINT NAME OF RESPONSIBLE OFFICIAL OF FIRM:	RESPONSIBLE OFFICIAL'S TELEPHONE NUMBER	DATE SIGNED:
Mike D. Moore	714-593-7450	

I HEREBY CERTIFY THAT ALL INFORMATION CONTAINED HEREIN AND INFORMATION SUBMITTED WITH THIS APPLICATION IS TRUE AND CORRECT.

SIGNATURE OF PREPARER:	TITLE OF PREPARER:	
Terry Ahn	Regulatory Specialist	
TYPE OR PRINT NAME OF PREPARER:	PREPARER'S TELEPHONE NUMBER	DATE SIGNED:
Terry Ahn	714-593-7082	10/23/08

AQMD USE ONLY	APPLICATION/TRACKING #	PROJECT #	TYPE B C D	EQUIPMENT CATEGORY CODE: /	FEE SCHEDULE: $	VALIDATION

ENG. A R DATE	ENG. A R DATE	CLASS I III IV	ASSIGNMENT UNIT ENGINEER	ENF. SECT.	CHECK/MONEY ORDER #	AMOUNT $

SCAQMD PERMIT PROCESSING SYSTEM (PPS)

FEE DATA - SUMMARY SHEET

Application No : **491468** IRS/SS No:

Previous Application No: Previous Permit No:

Company Name : **ORANGE COUNTY SANITATION DISTRICT** Facility ID: **17301**

Equipment Street: **10844 ELLISAVE , FOUNTAIN VALLEY CA 92708**

Equipment Desc : **UNSPECIFIED EQUIP/PROCESS (SCH C)**

Equipment Type : **BASIC** Fee Charged by: **B-CAT**

B-CAT NO. : **999993** C-CAT NO: **00** Fee Schedule: **C**

Facility Zone : **18** Deemed Compl. Date: **11/6/2008** Public Notice: **NO**

Evaluation Type : **PERMIT TO CONSTRUCT/OPERATE (PC/PO)** Small Business: ☐

Disposition : **Approve PC/PO, Recommended by Engineer** Higher Fees for Failing to Obtain a Permit: ☐

Lead Appl. No : Identical Permit Unit: ☐

Air quality Analysis			$0.00	Filing Fee Paid:	$0.00
E.I.R			$0.00	Permit Processing Fee Paid:	$4,867.37
Health Risk Assessment			$0.00	Permit Processing Fee Calculated*:	$3,244.91
Significant Project			$0.00	Permit Processing Fee Adjustment:	$-1,622.46
Expedited Processing	Hours:	0.00	$1,622.46		
Source Test Review	Hours:	0.00	$0.00		
Time & Material	Hours:	0.00	$0.00		
				Total Additional Fee:	$1,622.46
				Additional Charge:	$0.00

COMMENTS: R301 XPP = 7 HRS.

RECOMMENDED BY: **GAURANG RAWAL** DATE: **11/10/2008**

REVIEWED BY: COT DATE: 2/19/09

* ADJUSTED FOR SMALL BUSINESS, IDENTICAL EQUIPMENT AND P/O NO P/C PENALTY

SCAQMD PERMIT PROCESSING SYSTEM (PPS)

AEIS DATA SHEET

Company Name : ORANGE COUNTY SANITATION DISTRICT Facility ID : 17301

Equipment Address : 10844 ELLIS AVE
FOUNTAIN VALLEY CA 92708

Application Number : 491468 Equipment B-Cat : 999993

Estimated Completion Date : 11/10/08 Equipment C-Cat :

Equipment Type : Basic

Equipment Description : UNSPECIFIED EQUIP/PROCESS (SCH C)

	Emissions	
Emittants	**R1 LB/HR**	**R2 LB/HR**
CO	0.03	0.03
NOX	0.01	0.01
PM10	0.01	0.01
ROG	0.01	0.01
SOX	0.01	0.01

Applicable Rules

1401	03/07/2008	New Source Review of Toxic Air Contaminants
401	11/09/2001	Visible Emissions
402	05/07/1976	Nuisance

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Daily Start Times :	00:00	00:00	00:00	00:00	00:00	00:00	00:00
Daily Stop Times :	24:00	24:00	24:00	24:00	24:00	24:00	24:00

User's Initials : GR01 Date: 11/10/08 Supervisor's Name : CDT Review Date : 2/19/09

NSR DATA SUMMARY SHEET

Application No: 491468
Application Type: Permit to Construct
Application Status: PENDAPPRV
Previous Apps,Dev,Permit #: NONE

Company Name: ORANGE COUNTY SANITATION DISTRICT
Company ID: 17301
Address: 10844 ELLIS AVE,FOUNTAIN VALLEY, CA 92708
RECLAIM: NO
RECLAIM Zone: 01
Air Basin: SC
Zone: 18
Title V: YES

Device ID: 0 - WASTE-TO-ENERGY
Estimated Completion Date: 07-15-2009
Heat Input Capacity: 0 Million BTU/hr
Priority Reserve: NONE - No Priority Access Requested
Recommended Disposition: 31 - PERMIT TO OPERATE GRANTED
PR Expiration:
School Within 1000 Feet: NO
Operating Weeks Per Year: 52
Operating Days Per Week: 7
Monday Operating Hours: 00:00 to 24:00
Tuesday Operating Hours: 00:00 to 24:00
Wednesday Operating Hours: 00:00 to 24:00
Thursday Operating Hours: 00:00 to 24:00
Friday Operating Hours: 00:00 to 24:00
Saturday Operating Hours: 00:00 to 24:00
Sunday Operating Hours: 00:00 to 24:00

Emittant: CO
BACT:
Cost Effectiveness: NO
Source Type: MAJOR
Emis Increase: 1
Modeling: N/A
Public Notice: N/A
CONTROLLED EMISSION
Max Hourly: 0.03 lbs/hr
Max Daily: 0.72 lbs/day
UNCONTROLLED EMISSION
Max Hourly: 0.03 lbs/hr
Max Daily: 0.72 lbs/day
CURRENT EMISSION
BACT 30 days Avg: 1 lbs/day
Annual Emission: 262.08 lbs/yr
District Exemption: 1301(b)(1)-12/07/1995-General (NSR) - attainment air contaminant

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Emittant: NOX
BACT:
Cost Effectiveness: NO
Source Type: MAJOR
Emis Increase: 0
Modeling: N/A
Public Notice: N/A
CONTROLLED EMISSION
Max Hourly: 0 lbs/hr
Max Daily: 0 lbs/day
UNCONTROLLED EMISSION
Max Hourly: 0 lbs/hr
Max Daily: 0 lbs/day
CURRENT EMISSION
BACT 30 days Avg: 0 lbs/day
Annual Emission: 0 lbs/yr
District Exemption: None

Emittant: PM10
BACT:
Cost Effectiveness: NO
Source Type: MINOR
Emis Increase: 0
Modeling: N/A
Public Notice: N/A
CONTROLLED EMISSION
Max Hourly: 0 lbs/hr
Max Daily: 0 lbs/day
UNCONTROLLED EMISSION
Max Hourly: 0 lbs/hr
Max Daily: 0 lbs/day
CURRENT EMISSION
BACT 30 days Avg: 0 lbs/day
Annual Emission: 0 lbs/yr
District Exemption: None

Emittant: ROG
BACT:
Cost Effectiveness: NO
Source Type: MINOR
Emis Increase: 0
Modeling: N/A
Public Notice: N/A
CONTROLLED EMISSION
Max Hourly: 0 lbs/hr
Max Daily: 0 lbs/day
UNCONTROLLED EMISSION
Max Hourly: 0 lbs/hr
Max Daily: 0 lbs/day
CURRENT EMISSION
BACT 30 days Avg: 0 lbs/day
Annual Emission: 0 lbs/yr
District Exemption: None

Emittant: SOX
BACT:
Cost Effectiveness: NO
Source Type: MINOR
Emis Increase: 0
Modeling: N/A
Public Notice: N/A
CONTROLLED EMISSION
Max Hourly: 0 lbs/hr
Max Daily: 0 lbs/day
UNCONTROLLED EMISSION
Max Hourly: 0 lbs/hr
Max Daily: 0 lbs/day
CURRENT EMISSION
BACT 30 days Avg: 0 lbs/day
Annual Emission: 0 lbs/yr
District Exemption: None

SUPERVISOR'S APPROVAL: COT SUPERVISOR'S REVIEW DATE: 2/19/09

Processed By: gaurangr 11/10/2008 2:13:36 PM

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

February 19, 2009
A/N 491468
ID 017301

ORANGE COUNTY SANITATION DISTRICT
10844 Ellis Avenue
Fountain Valley, California 92708

Attention: Michael D. Moore, Manager, ECRA

Gentlemen:

PERMIT TO CONSTRUCT AND OPERATE
EXPERIMENTAL RESEARCH OPERATIONS

The system described below is granted a Permit to Construct and Operate (Application Number 491468) as allowed by and under the conditions set forth by Rule 441 of the Rules and Regulations of the South Coast Air Quality Management District and is subject to the special conditions listed.

EQUIPMENT DESCRIPTION:

FUEL CELL HYDROGEN GAS GENERATION RESEARCH UNIT CONSISTING OF:

1. FUEL SUPPLY LINE(S).
2. FUEL PRE-TREATMENT SKID WITH AN ACTIVATED CARBON VESSEL.
3. MECHANICAL BALANCE OF PLANT (MBOP), CONTAINING A HEAT EXCHANGER, PURIFIED WATER AND AIR SUPPLY LINES, AND WITH AN EXHAUST VENT.
4. FUEL CELL MODULE WITH CATHODE AND ANODE ELECTRODES MADE OF POROUS NICKEL CATALYST, AND MOLTEN CARBONATE ELECTROLYTE.
5. ELECTRICAL BALANCE OF PLANT (EBOP) CONTAINING A DC TO AC POWER CONVERTER, AND AC POWER SUPPLY TO GRID.
6. ANODE EXHAUST SKID WITH A SYNGAS PROCESSOR.
7. HYDROGEN RECOVERY UNIT, STANDPIPE VENT, RELIEF VENT, AND A CONDENSATE DRAIN.

TO BE LOCATED AT: 10844 ELLIS AVENUE
FOUNTAIN VALLEY, CA 92708

CONDITIONS:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN COMPLIANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED, UNLESS OTHERWISE NOTED BELOW.

2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.

3. THIS EQUIPMENT SHALL BE OPERATED BY PERSONNEL PROPERLY TRAINED IN ITS OPERATION.

4. THIS EXPERIMENTAL RESEARCH PERMIT SHALL EXPIRE ON FEBRUARY 19, 2010. AN EXTENSION OF TIME MAY BE GRANTED UPON WRITTEN REQUEST.

5. ORANGE COUNTY SANITATION DISTRICT (OCSD) SHALL NOTIFY AQMD WHEN CONSTRUCTION IS COMPLETE AND BEFORE OPERATING THE EQUIPMENT DESCRIBED IN THIS PERMIT.

6. THIS EQUIPMENT SHALL PRIMARILY BE FUELED WITH DIGESTER GAS.

7. WITHIN 90 DAYS OF COMPLETION OF THE RESEARCH EXPERIMENTS, THE ORANGE COUNTY SANITATION DISTRICT SHALL SUBMIT TO AQMD A COMPLETE REPORT WITH CONCLUSION AND RESULTS, SUCH AS; SYSTEM PERFORMANCE, EFFICIENCY, AMOUNT AND TYPES OF FUELS USED, AMOUNT OF HYDROGEN RECOVERED, PARAMETERS MEASURED, MONITORED AND CONTROLLED.

8. ALL RECORDS SHALL BE KEPT FOR A PERIOD OF AT LEAST TWO YEARS AND SHALL BE MADE AVAILABLE TO AQMD PERSONNEL UPON REQUEST.

It is your responsibility to comply with all laws, ordinances and regulations of other government agencies, which are applicable to this equipment.

If you have any questions, please call Mr. Gaurang Rawal at (909) 396-2543.

Yours truly,

Charles Tupac, P.E.
AQAC Supervisor
Refinery and Waste Management Permitting

GCR: CDT
cc: Sam Vergara, AQMD

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT	PAGES 6	PAGE 1
ENGINEERING AND COMPLIANCE DIVISION	APPL NO 491468	DATE 11/12/2008
PERMIT APPLICATION EVALUATION AND CALCULATIONS	PROCESSED BY GCR	CHECKED BY AD

PERMIT TO CONSTRUCT AND OPERATE EVALUATION
(RULE 441 RESEARCH PERMIT)

APPLICANT'S NAME: ORANGE COUNTY SANITATION DISTRICT

MAILING ADDRESS: 10844 ELLIS AVENUE
FOUNTAIN VALLEY, CA 92708
ATTN: TERRY AHN, REGULATORY SPECIALIST

EQUIPMENT ADDRESS: SAME AS ABOVE

FACILITY ID #: **017301** (FOUNTAIN VALLEY, PLANT 1)

441

EQUIPMENT DESCRIPTION: See ~~Sample P&A~~ letter

EXPERIMENTAL FUEL CELL ENERGY STATION, DIRECT FUEL CELL POWER PLANT, DFC 300, 300 KW POWER GENERATION, AND HYDROGEN RECOVERY UNIT, CONSISTING OF:

1. ANAEROBIC DIGESTER GAS, NATURAL GAS OR DIGESTER GAS/NATURAL GAS FUEL BLEND SUPPLY LINE.

2. FUEL PRE-TREATMENT SKID WITH AN ACTIVATED CARBON UNIT WITHIN A VESSEL.

3. MECHANICAL BALANCE OF PLANT (MBOP), WITH AN HEAT EXCHANGER, PURIFIED WATER AND AIR SUPPLY LINES, AND WITH AN EXHAUST PIPE, 8" DIA. X 15' H.

4. FUEL CELL MODULE WITH CATHODE AND ANODE ELECTRODES MADE OF POROUS NICKEL CATALYST, AND MOLTEN CARBONATE ELECTROLYTE.

5. ELECTRICAL BALANCE OF PLANT (EBOP) WITH DC TO AC POWER CONVERTER, AND AC POWER SUPPLY TO GRID.

6. ANODE EXHAUST SKID WITH A SYNGAS PROCESSOR.

7. HYDROGEN RECOVERY UNIT, WITH TAIL GAS, STANDPIPE VENT, RELIEF VENT, CONDENSATE DRAIN AND HYDROGEN SUPPLY LINE TO FUEL STATION.

CONDITIONS:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN COMPLIANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED, UNLESS OTHERWISE NOTED BELOW.

2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.

3. THIS EQUIPMENT SHALL BE OPERATED BY PERSONNEL PROPERLY TRAINED IN ITS OPERATION.

4. THIS EXPERIMENTAL RESEARCH PERMIT SHALL EXPIRE ON NOVEMBER 30, 2009. AN EXTENSION OF TIME MAY BE GRANTED UPON WRITTEN REQUEST.

5. A FLOW INDICATOR SHALL BE INSTALLED IN THE FUEL OR FUEL BLEND (ANAEROBIC DIGESTER GAS AND NATURAL GAS) SUPPLY LINE TO THE FUEL PRETREATMENT SKID. IN CASE A PRESSURE SENSOR DEVICE IS USED INSTEAD OF THE FLOW INDICATOR, A CONVERSION CHART SHALL BE AVAILABLE TO INDICATE THE CORRESPONDENT FLOW RATE (IN S CFM) TO THE PRESSURE READING. THE FLOW RATE RECORDS SHALL BE MAINTAINED ON FILE.

6. FUEL FLOW MEASURED SHALL NOT EXCEED 75 SCFM DIGESTER GAS (PRIMARY FUEL) AND 39 SCFM NATURAL GAS.

7. THE OWNER OR OPERATOR OF THIS EQUIPMENT SHALL CONDUCT SOURCE TESTS UNDER THE FOLLOWING CONDITIONS:

   A. THE TESTS SHALL BE CONDUCTED AND A WRITTEN REPORT SUBMITTED TO THE AQMD WITHIN 60 DAYS AFTER ACHIEVING MAXIMUM FUEL FLOW RATE, BUT NOT LATER THAN 180 DAYS AFTER INITIAL STARTUP. THE TESTS SHALL INCLUDE, BUT MAY NOT BE LIMITED TO, A TEST OF THE INLET FUEL (DG, NG OR BLEND) AND EQUIPMENT EXHAUST FOR:

      a. METHANE, TOTAL NON-METHANE HYDROCARBONS, AND SPECIATED TOXIC AIR CONTAMINANTS.
      b. C1 THROUGH C3 SULFUR COMPOUNDS (SPECIATED, INLET ONLY), AND SILOXANE.
      c. CARBON MONOXIDE (EXHAUST ONLY)
      d. OXIDES OF NITROGEN (EXHAUST ONLY)
      e. CARBON DIOXIDE
      f. TOTAL PARTICULATES (EXHAUST ONLY)
      g. OXYGEN AND NITROGEN
      h. MOISTURE CONTENT, TEMPERATURE AND FLOW RATE
      i. POWER GENERATED (KW)
      j. HYDROGEN RECOVERED
      k. SILOXANES AND H2S REMOVAL EFFICIENCY (PRETREATMENT UNIT).

      THE REPORT SHALL ALSO PRESENT THE EMISSIONS DATA IN UNITS OF POUNDS PER HOUR (LB/HR), LBS/ MWH, AND PARTS PER MILLION (PPMV).

   B. A TEST PROTOCOL SHALL BE SUBMITTED TO THE AQMD, REFINERY AND WASTE MANAGEMENT PERMITTING, 21865 COPLEY DRIVE, DIAMOND BAR, CA 91765, NOT LATER THAN 30 DAYS BEFORE THE PROPOSED TEST DATE AND SHALL BE APPROVED BY AQMD BEFORE THE TEST COMMENCES.

   C. THE TEST SHALL BE PERFORMED BY A TESTING LABORATORY CERTIFIED TO MEET THE CRITERIA IN AQMD RULE 304 (l) (CONFLICT OF INTEREST).

D. THE AQMD ENGINEER SHALL BE NOTIFIED OF THE DATE AND TIME OF THE TEST AT LEAST 10 DAYS PRIOR TO THE TEST, OR WITHIN A TIME PERIOD AGREED UPON BY THE AQMD ENGINEER.

E. SAMPLING FACILITIES SHALL COMPLY WITH AQMD "GUIDELINES FOR CONSTRUCTION OF SAMPLING AND TESTING FACILITIES" PURSUANT TO RULE 217.

8. THE OPERATOR SHALL CALCULATE THE MAXIMUM INDIVIDUAL CANCER RISK (MICR), ACUTE HAZARD INDEX (HIA) AND CHRONIC HAZARD INDEX (HIC), BASED ON THE SOURCE TESTS RESULTS, USING AQMD PUBLISHED "RISK ASSESSMENT PROCEDURES FOR RULES 1401 AND 212", VERSION 7.0, APRIL 30, 2008, TO DETERMINE THE COMPLIANCE WITH RULE 1401. RESULTS SHALL BE SUBMITTED TO AQMD.

9. WITHIN 90 DAYS OF COMPLETION OF THE RESEARCH EXPERIMENTS, THE ORANGE COUNTY SANITATION DISTRICT SHALL SUBMIT TO AQMD A COMPLETE REPORT WITH CONCLUSION AND RESULTS, SUCH AS; SYSTEM PERFORMANCE, EFFICIENCY, PARAMETERS MEASURED, MONITORED AND CONTROLLED.

10. ALL RECORDS SHALL BE KEPT FOR A PERIOD OF AT LEAST TWO YEARS AND SHALL BE MADE AVAILABLE TO AQMD PERSONNEL UPON REQUEST.

BACKGROUND/DISCUSSION: This application is for a Rule 441 PC-PO at at Title V facility.

On October 30, 2008, Orange County Sanitation District (OCSD) submitted this application for the Rule 441 research permit, for a permit to construct and operate an experimental Fuel Cell Energy Station and hydrogen recovery unit. ~~The proposed fuel cell energy is ultra clean, efficient and reliable power generating system.~~ The equipment will use anaerobic digester gas (primary fuel), natural gas or blend of DG / NG, as fuel. The intended purpose is to evaluate and demonstrate alternative source of energy (produce ~300 kw electricity) to reduce overall energy costs while reducing emissions. Hydrogen gas recovered will be sent to net by Hydrogen Fueling Station, for use by the public.
The proposed project is in collaborationwith U.S. Department of Energy (DOE), California Air resources Board (CARB), Air Products and Chemicals , Inc. 9APCI) and Fuel Cell Energy (FCE). The proposed temporary unit will be installed at OCSD, Plant 1, to be use for 6-month to a year.

Notice of Exemption was filed 5/5/2008, which was approved by the Lead Agency, with Office of Planning and Research, Sacramento. This was Categorical exemption. A copy of the NOE is included with application submittal..

PROCESS DESCRIPTION:

Following is the brief process description. For details please refer to the application package that also includes process flow block diagram and equipmet specifications for Direct Fuel Cell, DFC 300.

Fuel Pretreatment: Fuel (anaerobic digester gas as primary fuel, Natural gas or blend of Dg/NG) will be pretreated by activated carbon media, contained within a vessel, to remove H_2S, Siloxanes and other impurities.
Natural gas = 39 scfm, or DG = 75 scfm.

Mechanical Balance of Plant (MBOP): It provides preheating of water and fuel, humidification of the fuel and supply of the air. Cleaned (pretreated) DG and purified water are injected into the heat exchanger that take heat generated from the cathode exhaust gas. The heated humid fuel is routed to the preconverter where higher hydrocarbons are converted to methane to avoid carbon deposition on the fuel cell stacks.

Fuel Cell Module: Fuel cell module consists of cathode and anode electrodes made of porous nickel catalysts and they are separated by molten carbonate (CO_3) elcrolyte. Methane in the fuel is reformed at the anode to form hydrogen (H_2)and carbon dioxide (CO_2). At the anode, H_2 gas is stripped off of electrons which flows through an external circuit, producing DC power and H_2 then return to the cathode. The chemical reaction is,

$CH_4 + 2H_2O \rightarrow 4\ H_2 + CO_2 + CO$ (byproduct)

At the cathode, O_2 from the air supplied by MBPO and CO_2 recycled from from the anode off-gas react with electrons to produce carbonate ions. The carbonate ions flow through the molten carbonate electrolyte to the fuel cell anode.The heat generated due to chemical reaction is used to heat incoming fuel and water in the MBOP.

$4\ H_2 + 4\ CO_3^{2-} \rightarrow 4\ H_2O + 4\ CO_2 + 8\ e^-$

$2\ O_2 + 4\ CO_2 + 8\ e^- \rightarrow 4\ CO_3^{2-}$

Electrical Balance of Plant (EBOP): Here DC power is converted to AC power and electricity is sent to the grid.

Hydrogen Recovery Unit: Off-gas from the anode contains H_2, CO, CO_2 and H_2O, the combination of gases is commonly called Syn gas. H_2 is shifted to maximize the hydrogen production. It is then sent to the hydrogen purification unit that uses principle of pressure swing adsorption in order to separate H_2 from the other products. CO_2 and other reformate products are adsorbed on the adsorbent beds at high pressure while H_2 passthrough unadsorbed. H_2 is then compressed and sent to the fueling station for use by the public.

$H_2O + CO \rightarrow H_2 + CO_2$

Tail gases, from the hydrogen recovery unit, mostly CO_2, H_2O and residual H_2 is sent to the cathode side of the fuel cell module, where CO_2 is converted to CO_3 to complete the fuel cell circuit. Any excess CO_2 and water leave the cathode as exhaust.

Operating Schedule: 24 hrs/day, 7 days/wk, 52 wks/yr.

EMISSIONS:

Estimated criteria pollutants' emissions based on manufacturer's EF data for 300 kw NG fuel cell.

POLLUTANT	LBS/MWH	LBS/HR	LBS/DAY
CO	0.1	0.035	0.84
NOX	0.01	0.0035	0.08
PM10	0.00002	0.000007	0
SOX	0.0001	0.00003	0
VOC	0.01	0.003	0.07

Note: No emission limits imposed for the permit due to very low emissions expected, however, source test required to determine emissions for this research permit.

RISK ASSESSMENT: (MICR, HIC & HIA)

Risk is evaluated based on 75 scfm anaerobic digester gas concentrations provided, prior to pretreatment.
Please refer to the HRA analysis results, R1401 spreadsheet, included in folder.
Risk is estimated using SCREEN 3 analysis, building downwash effects, and maximum ground level 1-hr concentration at nearest residence = 280 m, nearest business = 380 m).

Maximum MICR (R) receptor = **1.46E-07**
Maximum MICR (C) receptor = 1.90E-08
HIC and HIA values are < 1 for each targeted organ.

H2S ODOR CONTROL ANALYSIS:

SCREEN 3 model analysis indicated 1-hr maximum ground level con. at 25 meters = 386.0 mcg/m3 (Bldg. Cavity-2) for 1 lb/hr emission rate.

H2S emission used is the worst-case scenario (that is assuming no reduction for DG inlet H2S concentration from the pre-treatment unit containing activated carbon media) =0.0128 lbs/hr H2S (R1401 spreadsheet, R1 =R2)

@ 0.0128 lbs H2S /hr x 386 mcg/m3 / 1 lb/hr = 4.94 mcg/m3
= 4.94 x 0.02445 / 34
= 0.0035 ppmv H2S
= 3.5 ppbv < 30 ppbv H2S limit under CSAAQS.
< 8 ppbv H2S odor threshold under OEHHA.

California State Ambient Air Quality Standard (CSAAQS)
California Office of Environmental Health Hazard Assessment Office (OEHHA).

RULES EVALUATION

RULE 212: There are no schools within 1000' of source. This is a research project expected to run for about 1 yr. Daily emissions are negligible. Risk is estimated at less than one in a million (1.46 E-07). Compliance with this rule is expected.

REG. IV: This is an experimental research permit. Equipment is exempt form Regulation IV requirements, except for Rule 402.

RULE 402: Nuisance complaints are not expected with the proper operation and monitoring of the equipment.

REG XIII: Daily emissions are estimated to be < 1 lb for each criteria pollutant. No BACT is required. No modeling is required.
Estimated CO emission is 0.84 lbs/day requiring 1 lb offset. For NSR, CO is considered < 1 lb/day, and is not subject to BACT. However, CO is in attainment, thefrore, is exempt from offset per Rule 1301(b)(1)-General NSR- attainment air contaminant. (See E-mail from Mohsen Nazemi, August 09, 2007, in folder).
Compliance with this regulation is expected.

RULE 1401: Estimated risk is 1.46E-07 from the experimental fuel cell energy station and H2 recovery unit. HIC & HIA indices estimated to be < 1, for each targated organ. Compliance is expected.

RULE 1401.1: Not applicable. This is an existing facility.

xxx : Rule 3004 provides that R441 research sheet not be included in the TV permit.

CONCLUSIONS/RECOMMENDATION:

The above equipment is expected to comply with all applicable District's Rules and Regulations. Rule 441 Permit to construct and operate is recommended subject to conditions listed on Pg. 1-3.

Amir Dejbakhsh

From: Ahn, Terry [tahn@ocsd.com]
Sent: Tuesday, February 10, 2009 1:51 PM
To: Amir Dejbakhsh
Cc: Kogan, Vlad
Subject: Source Testing Requirement for OCSD Fuel Cell Energy Station - A/N 491468

Hi Amir,

This in response to your phone call on 1/22 regarding source testing requirement for fuel cell energy station – A/N 491468. I'm sorry it took some time for me to get the information from all of the participants of this research project. Bottom line is that there is no air quality source testing provision in our contractual agreements with the various agencies. However, our fuel cell energy station being pilot-sized and temporary, we would like to propose to SCAQMD to accept empirical data from tests conducted at similar treatment facilities such as Riverside or Eastern Municipal Water District (EMWD).

As you may know both of these facilities have full-scale digester gas fuel cell station with the fuel cell unit supplied by the same vendor (FuelCell Energy - FCE) as ours. In fact, EMWD has three fuel cells of the same model as ours. Our FCE contact has indicated that Riverside has completed its first round of testing with satisfactory results. EMWD's system is on line and FCE expects source test to take place soon. If EMWD's test results are satisfactory, it may further motivate SCAQMD to extend the existing Rule 219 exemption for fuel cells to those operated on digester gas.

With that, I'd like to ask you to waive the source testing requirement in our research permit pending SCAQMD's determination of relevance, applicability, and acceptance of the source test results from the facilities mentioned above. Source testing is very expensive and takes a lot of coordination and effort. For our short term research project, requiring same source testing requirement as the full-scale projects seems excessive.

Please let me know if you'd like to discuss this further. Thank you.

Terry Ahn
Orange County Sanitation District
Environmental Compliance & Regulatory Affairs, Div 620
(714) 593-7082

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

491468, OCSD, FV, FUEL CELL

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	.126100
STACK HEIGHT (M)	=	4.6480
STK INSIDE DIAM (M)	=	.2030
STK EXIT VELOCITY (M/S)	=	13.1236
STK GAS EXIT TEMP (K)	=	671.8900
AMBIENT AIR TEMP (K)	=	293.0000
RECEPTOR HEIGHT (M)	=	1.5000
URBAN/RURAL OPTION	=	URBAN
BUILDING HEIGHT (M)	=	9.1500
MIN HORIZ BLDG DIM (M)	=	23.8000
MAX HORIZ BLDG DIM (M)	=	27.4000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

STACK EXIT VELOCITY WAS CALCULATED FROM
VOLUME FLOW RATE = 900.00000 (ACFM)

BUOY. FLUX = .748 M**4/S**3; MOM. FLUX = .774 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
10.	.0000	0	.0	.0	.0	.00	.00	.00	NA
100.	132.0	4	1.0	1.0	320.0	7.97	18.58	13.79	SS
200.	68.96	6	1.0	1.0	10000.0	10.67	28.27	16.78	SS
300.	41.95	6	1.0	1.0	10000.0	10.67	38.04	22.42	SS
400.	28.40	6	1.0	1.0	10000.0	10.67	47.49	27.58	SS
500.	20.73	6	1.0	1.0	10000.0	10.67	56.63	32.35	SS
MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 10. M:									
28.	305.7	1	1.0	1.0	320.0	6.27	12.81	7.06	SS

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SCREEN DISCRETE DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
20.	.0000	0	.0	.0	.0	.00	.00	.00	NA
30.	290.2	1	1.0	1.0	320.0	6.37	12.87	7.31	SS
→ 280. (R)	45.89	6	1.0	1.0	10000.0	10.67	36.11	21.33	SS
→ 380. (C)	30.49	6	1.0	1.0	10000.0	10.67	45.62	26.58	SS

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
* SUMMARY OF TERRAIN HEIGHTS ENTERED FOR *
* SIMPLE ELEVATED TERRAIN PROCEDURE *
****

TERRAIN HT (M)	DISTANCE RANGE (M) MINIMUM	MAXIMUM
0.	10.	500.
0.	20.	--
0.	30.	--
0.	280.	--
0.	380.	--

****
*** REGULATORY (Default) ***
PERFORMING CAVITY CALCULATIONS
WITH ORIGINAL SCREEN CAVITY MODEL
(BRODE, 1988)
****

*** CAVITY CALCULATION - 1 ***			*** CAVITY CALCULATION - 2 ***		
CONC (UG/M**3)	=	335.3	CONC (UG/M**3)	=	386.0
CRIT WS @10M (M/S)	=	1.19	CRIT WS @10M (M/S)	=	1.27
CRIT WS @ HS (M/S)	=	1.19	CRIT WS @ HS (M/S)	=	1.27
DILUTION WS (M/S)	=	1.00	DILUTION WS (M/S)	=	1.00
CAVITY HT (M)	=	9.65	CAVITY HT (M)	=	9.45
CAVITY LENGTH (M)	=	27.42	CAVITY LENGTH (M)	=	25.24
ALONGWIND DIM (M)	=	23.80	ALONGWIND DIM (M)	=	27.40

****
END OF CAVITY CALCULATIONS
****

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	305.7	28.	0.

BLDG. CAVITY-1	335.3	27.	--	(DIST = CAVITY LENGTH)
BLDG. CAVITY-2	386.0	25.	--	(DIST = CAVITY LENGTH)

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

Intro

SCREENING INPUT

Table A

modeling emissions rate	1.00	lb/hr
modeling emissions rate	4.38	tons/yr
Max hr/dy	24	hr/day
day per week	7	dy/wk
wk/yr	52	wk/yr
MODELING RESULTS -MAX ONE HOUR		
Distance residence	280.00	meter
Max. 1-hour Conc. Residence	45.89	ug/m3
Annualized Conc. Residence	3.67	ug/m3
Distance Commerical	380.00	meter
Max. 1-hour Conc. Commerical	30.49	ug/m3
Annualized Conc. Commercial	2.44	ug/m3

Annualized X/Q

X/Q Residential	0.83817	(ug/m^3)/(tons/yr)
X/Q Commercial	0.55689	(ug/m^3)/(tons/yr)

Max. X/Q

X/Q Residential	45.89	(ug/m^3)/(lbs/hr)
X/Q Commercial	30.49	(ug/m^3)/(lbs/hr)

Table B

	Interpolation								
	Stc Ht: 15.25			row: 1					
	Residential			Industrial			X/Q for one-in-a-million		
	near	actual	far	near	actual	far	near	actual	far
distance		280.00			380.00			#DIV/0!	
X/Q - 1 hr conc ug/m3		45.89			30.49				
X/Q Annualized (ug/m^3)/(tons/yr)		0.84			0.56				

CONVERSION CALCULATOR To Convert from British to Metric Units

STACK DATA

actual exhuast rate	900.00	acfm
Temp.	750.00	degree F
Stack diameter	8.00	in
Stack height	15.25	ft
modeling emissions ra	1.00	lb/hr

SCREEN IMPUT DATA

Temp	671.889	degrees k
Stack dia	0.203	meter
Stack area	0.032	square meter
Stack height	4.648	meter
Stack velocity	13.105	m/s
modeling emissions ra	0.12611	gr/s

TIER 3 SCREENING RISK ASSESSMENT

Application deemed complete date:	11/06/08

A/N: 491468
Fac: OCSD-FV, FUELL CELL ENERGY STN.

1. Stack Data		Units
Hour/Day	24	hr/day
Day/Week	7	day/wk
Week/Year	52	wk/yr
Emission Units (non-combustion only)	lb/hr	
Control Efficiency (other non-combustion only)		fraction range 0-1
Does source have TBACT?	NO	
Point or Volume Source ?	P	p or v
Stack Height or Building Height	15.25	feet
Area (For Volume Source Only)		ft²
Distance-Residential	280	meters
Distance-Commercial	380	meters
Meteorological Station	Costa Mesa	

Source Type:	O - Other	
Screening Mode	YES	
Emission Units	lb/hr	
Source output capacity	n/a	n/a

FOR USER-DEFINED CHEMICALS AND EMISSIONS, FILL IN THE TABLE BELOW

USER DEFINED CHEMICALS AND EMISSIONS				R1 - uncon	R2 - controlled
Code	Compound	lb/hr	MW	lbs/hr	lbs/hr
B1	Benzene (including benz	1.80E-04	78.11	0.00018	1.80E-04
C2	Carbon disulfide	2.38E-06	76.14	2.38E-06	2.38E-06
D4	Dichlorobenzene, p- (or I	1.82E-03	147.01	0.00182	1.82E-03
E4	Ethyl benzene	8.54E-04	106.16	0.000854	8.54E-04
H12	Hydrogen sulfide	1.28E-02	34.08	0.0128	1.28E-02
M13	Methylene chloride(Dich	2.77E-05	84.94	0.0000277	2.77E-05
P2	Perchloroethylene (or tet	9.43E-04	165.83	0.000943	9.43E-04
T3	Toluene (methyl benzene	4.44E-03	92.13	0.00444	4.44E-03
T8	Trichloroethylene	7.29E-04	130.4	0.000729	7.29E-04
V5	Vinyl chloride (chloroeth	8.07E-05	62.5	0.0000807	8.07E-05
X1	Xylenes (isomers and mix	1.74E-03	106.2	0.00174	1.74E-03

Dillingham Software Engineering, Inc.

1025 Prospect St., Ste 320
La Jolla, CA 92037
858-551-8526
www.DillinghamSoftware.com

South Coast Air Quality Management District
21865 E.Copley Drive
Diamond Bar, CA 91765

FOR COMBUSTION SOURCES, FILL IN THE DATA ON THE LEAN BURN, RICH BURN AND BOILER SHEETS.
THE CHEMICALS AND EMISSION RATES ARE AUTOMATICALLY COPIED TO THE TABLES BELOW - DO NOT CHANGE THESE TABLES

LEAN BURN ICE		R1 - uncontrolle	R2 - controlled
Code	Compound	lbs/hr	lbs/hr
A1	Acetaldehyde	1.71E-01	3.93E-03
A3	Acrolein	1.05E-01	2.42E-03
B1	Benzene (including benzene from gasoline)	9.00E-03	2.07E-04
B9	Butadiene, 1,3-	5.46E-03	1.26E-04
C3	Carbon tetrachloride (Tetrachloromethane)	7.51E-04	1.73E-05
D6	Dichloroethane, 1,1-	4.83E-04	1.11E-05
E4	Ethyl benzene	8.12E-04	1.87E-05
E7	Ethylene dibromide(1,2-Dibromoethane)	9.06E-04	2.08E-05
E8	Ethylene dichloride (or 1,2-dichloroethane)	4.83E-04	1.11E-05
F3	Formaldehyde	1.08E+00	2.48E-02
H8	Hexane (n-)	2.27E-02	5.22E-04
M6	Methanol (methyl alcohol)	5.11E-02	1.18E-03
M13	Methylene chloride(Dichloromethane)	4.09E-04	9.41E-06
P3	Phenol	4.91E-04	1.13E-05
P9	PolyCyclic Aromatic Hydrocarbon (PAHs)	5.50E-04	1.27E-05
P12	Benzo[b]fluoranthene	3.40E-06	7.81E-08
P15	Chrysene	1.42E-05	3.26E-07
P30	Napthalene	1.52E-03	3.50E-05
S6	Styrene (vinyl benzene)	4.83E-04	1.11E-05
T1	Tetrachloroethane 1,1,2,2-	8.18E-04	1.88E-05
T3	Toluene (methyl benzene)	8.35E-03	1.92E-04
T7	Trichloroethane, 1,1,2-	6.51E-04	1.50E-05
V5	Vinyl chloride (chloroethylene)	3.05E-04	7.01E-06
X1	Xylenes (isomers and mixtures)	3.76E-03	8.66E-05
c7	Chlorobenzene	6.22E-04	1.43E-05
c14	Chloroform(trichloromethane)	5.83E-04	1.34E-05

RICH BURN ICE		R1 - uncontrolle	R2 - controlled
Code	Compound	lbs/hr	lbs/hr
A1	Acetaldehyde	3.63E-03	8.35E-05
A3	Acrolein	3.42E-03	7.87E-05
B1	Benzene (including benzene from gasoline)	2.06E-03	4.73E-05
B9	Butadiene, 1,3-	8.63E-04	1.98E-05
C3	Carbon tetrachloride (Tetrachloromethane)	2.30E-05	5.30E-07
C7	Chlorobenzene	1.68E-05	3.86E-07
C14	Chloroform(trichloromethane)	1.78E-05	4.10E-07
D6	Dichloroethane, 1,1-	1.47E-05	3.38E-07
E4	Ethyl benzene	3.23E-05	7.42E-07
E7	Ethylene dibromide(1,2-Dibromoethane)	2.78E-05	6.37E-07
E8	Ethylene dichloride (or 1,2-dichloroethane)	1.47E-05	3.38E-07
F3	Formaldehyde	2.67E-02	6.13E-04
M6	Methanol (methyl alcohol)	3.98E-03	9.16E-05
M13	Methylene chloride(Dichloromethane)	5.36E-05	1.23E-06
P9	PolyCyclic Aromatic Hydrocarbon (PAHs)	5.71E-05	1.31E-06
P30	Napthalene	1.26E-04	2.91E-06
S6	Styrene (vinyl benzene)	1.55E-05	3.56E-07
T1	Tetrachloroethane 1,1,2,2-	3.29E-05	7.57E-07
T3	Toluene (methyl benzene)	7.26E-04	1.67E-05
T7	Trichloroethane, 1,1,2-	1.99E-05	4.58E-07
V5	Vinyl chloride (chloroethylene)	9.34E-06	2.15E-07
X1	Xylenes (isomers and mixtures)	2.54E-04	5.83E-06

BOILERS		R1 - uncontrolle	R2 - controlled
Code	Compound	lbs/hr	lbs/hr
A1	Acetaldehyde	8.19048E-05	8.19048E-05
A3	Acrolein	5.14286E-05	5.14286E-05
B1	Benzene (including benzene from gasoline	0.000152381	0.000152381
E4	Ethyl benzene	0.000180952	0.000180952
F3	Formaldehyde	0.00032381	0.00032381
H8	Hexane (n-)	0.00012	0.00012
P30	Napthalene	5.71429E-06	5.71429E-06
P9	PolyCyclic Aromatic Hydrocarbon (PAHs	1.90476E-06	1.90476E-06
P78	Propylene	0.01392381	0.01392381
T3	Toluene (methyl benzene)	0.000697143	0.000697143
X1	Xylenes (isomers and mixtures)	0.000518095	0.000518095

TIER 1 SCREENING RISK ASSESSMENT

Receptor Distance (actual)	280
Receptor Distance (for X/Q lookup)	100

Tier 1 Results	
Chronic ASI	**Acute ASI**
3.95E+00	1.14E-01
FAILED	passed

APPLICATION SCREENING INDEX CALCULATION

Code	Compound	Average Annual Emission Rate (lbs/yr)	Max Hourly Emission Rate (lbs/hr)	Cancer / Chronic Pollutant Screening Level (lbs/yr)	Acute Pollutant Screening Level (lbs/hr)	Cancer / Chronic Pollutant Screening Index (PSI)	Acute Pollutant Screening Index (PSI)
B1	Benzene (including benzene from gasoline	1.57E+00	1.80E-04	8.92291821	3.955214799	1.76E-01	4.55E-05
C2	Carbon disulfide	2.08E-02	2.38E-06	206718.3463	18.86333212	1.01E-07	1.26E-07
D4	Dichlorobenzene, p- (or 1,4-dichlorobenze	1.59E+01	1.82E-03	22.30729552	N/A	7.13E-01	N/A
E4	Ethyl benzene	7.46E+00	8.54E-04	516795.8656	N/A	1.44E-05	N/A
H12	Hydrogen sulfide	1.12E+02	1.28E-02	2583.979328	0.112449799	4.33E-02	1.14E-01
M13	Methylene chloride(Dichloromethane)	2.42E-01	2.77E-05	0.094508008	N/A	2.56E+00	N/A
P2	Perchloroethylene (or tetrachloroethylene)	8.24E+00	9.43E-04	42.49008671	53.54752343	1.94E-01	1.76E-05
T3	Toluene (methyl benzene)	3.88E+01	4.44E-03	77519.37984	99.06291834	5.00E-04	4.48E-05
T8	Trichloroethylene	6.37E+00	7.29E-04	127.4702601	N/A	5.00E-02	N/A
V5	Vinyl chloride (chloroethylene)	7.05E-01	8.07E-05	3.304784522	481.9277108	2.13E-01	1.67E-07
X1	Xylenes (isomers and mixtures)	1.52E+01	1.74E-03	180878.553	58.90227577	8.40E-05	2.95E-05
	TOTAL (APPLICATION SCREENING INDEX)					**3.95E+00**	**1.14E-01**

TIER 3 SCREENING RISK ASSESSMENT

A/N:	491468	Application deemed complete date	11/06/08
Fac:	OCSD-FV, FUELL CELL ENERGY STN.		

2. Tier 2 Data

MET Factor	1.00
4 hr	0.87
6 or 7 hrs	0.88

Dispersion Factors

3	3A & 3B For Chronic X/Q
6	For Acute X/Q

Dilution Factors (ug/m3)/(tons/yr)

Receptor	X/Q	X/Qmax
Residential	0.838173516	45.89
Commercial	0.556894977	30.49

Adjustment and Intake Factors

	Afann	DBR	EVF
Residential	1	302	0.96
Worker	1	149	0.38

3. Rule 1401 Compound Data

Code	Compound	R1 - uncontrolled (lbs/hr)	R2 - controlled (lbs/hr)	CP	MP MICR Resident	MP MICR Worker	MP Chronic Resident	MP Chronic Worker	REL Chronic	REL Acute
B1	Benzene (including benzene from gasoline)	1.80E-04	1.80E-04	1.00E-01	1	1	1	1	60	1300
C2	Carbon disulfide	2.38E-06	2.38E-06		1	1	1	1	800	6200
D4	Dichlorobenzene, p- (or 1,4-dichlorobenzene)	1.82E-03	1.82E-03	4.00E-02	1	1	1	1	800	
E4	Ethyl benzene	8.54E-04	8.54E-04		1	1	1	1	2000	
H12	Hydrogen sulfide	1.28E-02	1.28E-02		1	1	1	1	10	42
M13	Methylene chloride(Dichloromethane)	2.77E-05	2.77E-05	3.50E-03	1	1	1	1	400	14000
P2	Perchloroethylene (or tetrachloroethylene)	9.43E-04	9.43E-04	2.10E-02	1	1	1	1	35	20000
T3	Toluene (methyl benzene)	4.44E-03	4.44E-03		1	1	1	1	300	37000
T8	Trichloroethylene	7.29E-04	7.29E-04	7.00E-03	1	1	1	1	600	
V5	Vinyl chloride (chloroethylene)	8.07E-05	8.07E-05	2.70E-01	1	1	1	1		180000
X1	Xylenes (isomers and mixtures)	1.74E-03	1.74E-03		1	1	1	1	700	22000
					1	1	1	1		
					1	1	1	1		
					1	1	1	1		
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					1	1	1	1		

4. Emission Calculations

	uncontrolled	controlled		
Compound	R1-lb/hr	R2-lb/hr	R2-lb/yr	R2-ton/yr
Benzene (including benzene from gasoline)	1.80E-04	1.80E-04	1.57248	0.0007862
Carbon disulfide	2.38E-06	2.38E-06	0.0207917	1.04E-05
Dichlorobenzene, p- (or 1,4-dichlorobenzene)	1.82E-03	1.82E-03	15.89952	0.0079498
Ethyl benzene	8.54E-04	8.54E-04	7.460544	0.0037303
Hydrogen sulfide	1.28E-02	1.28E-02	111.8208	0.0559104
Methylene chloride(Dichloromethane)	2.77E-05	2.77E-05	0.2419872	0.000121
Perchloroethylene (or tetrachloroethylene)	9.43E-04	9.43E-04	8.238048	0.004119
Toluene (methyl benzene)	4.44E-03	4.44E-03	38.78784	0.0193939
Trichloroethylene	7.29E-04	7.29E-04	6.368544	0.0031843
Vinyl chloride (chloroethylene)	8.07E-05	8.07E-05	0.7049952	0.0003525
Xylenes (isomers and mixtures)	1.74E-03	1.74E-03	15.20064	0.0076003
Total	2.36E-02	2.36E-02	2.06E+02	1.03E-01

A/N: 491468 Date: 11/06/08

TIER 3 RESULTS

5. MICR

MICR = CP (mg/(kg-day))^-1 * Q (ton/yr) * (X/Q) * Afann * Met * DBR * EVF * 1.E-6 * MP

Compound	Residential	Commercial
Benzene (including benzene from gasoline)	1.91E-08	2.48E-09
Carbon disulfide		
Dichlorobenzene, p- (or 1,4-dichlorobenzene)	7.73E-08	1.00E-08
Ethyl benzene		
Hydrogen sulfide		
Methylene chloride(Dichloromethane)	1.03E-10	1.34E-11
Perchloroethylene (or tetrachloroethylene)	2.10E-08	2.73E-09
Toluene (methyl benzene)		
Trichloroethylene	5.42E-09	7.03E-10
Vinyl chloride (chloroethylene)	2.31E-08	3.00E-09
Xylenes (isomers and mixtures)		
Total	**1.46E-07**	**1.90E-08**
	Pass	**Pass**

No Cancer Burden, MICR<1.E-6

5a. Cancer Burden	no
X/Q for one-in-a-million:	
Distance (meter	no data
Area (km2):	
Population:	
Cancer Burden:	

6. Hazard Index

HIA = [Q(lb/hr) * (X/Q)max] * AF / Acute REL

HIC = [Q(ton/yr) * (X/Q) * MET * MP] / Chronic REL

Target Organs	Acute	Chronic
Cardiovascular or blood system		1.09E-04
Central or peripheral nervous system		
Gastrointestinal system and liver	6.23E-06	1.56E-06
Immune system	1.18E-05	2.54E-07
Kidney	1.13E-05	6.67E-05
Reproductive system	6.23E-06	4.45E-06
Respiratory system	1.40E-02	1.10E-05
Skin	1.18E-05	4.45E-06
Eye	1.13E-05	1.09E-04
Endocrine system		

A/N: 491468 Date: 11/06/08

6a. Hazard Index Acute HIA = [Q(lb/hr) *.(X/Q)max] *AF/ Acute REL

	HIA - Residential									
Compound	AL	CV	DEV	EYE	HEM	IMM	NS	REP	RESP	SKIN
Benzene (including benzene			6.23E-06		6.23E-06	6.23E-06		6.23E-06		
Carbon disulfide			1.73E-08				1.73E-08	1.73E-08		
Dichlorobenzene, p- (or 1,4-										
Ethyl benzene										
Hydrogen sulfide							1.40E-02			
Methylene chloride(Dichlorc							9.08E-08			
Perchloroethylene (or tetrach				2.16E-06			2.16E-06		2.16E-06	
Toluene (methyl benzene)			5.51E-06	5.51E-06			5.51E-06	5.51E-06	5.51E-06	
Trichloroethylene										
Vinyl chloride (chloroethyle				2.06E-08			2.06E-08		2.06E-08	
Xylenes (isomers and mixtur				3.63E-06					3.63E-06	
Total			1.18E-05	1.13E-05	6.23E-06	6.23E-06	1.40E-02	1.18E-05	1.13E-05	

	HIA - Commercial									
Compound	AL	CV	DEV	EYE	HEM	IMM	NS	REP	RESP	SKIN
Benzene (including benzene			4.14E-06		4.14E-06	4.14E-06		4.14E-06		
Carbon disulfide			1.15E-08				1.15E-08	1.15E-08		
Dichlorobenzene, p- (or 1,4-										
Ethyl benzene										
Hydrogen sulfide							9.29E-03			
Methylene chloride(Dichlorc							6.03E-08			
Perchloroethylene (or tetrach				1.44E-06			1.44E-06		1.44E-06	
Toluene (methyl benzene)			3.66E-06	3.66E-06			3.66E-06	3.66E-06	3.66E-06	
Trichloroethylene										
Vinyl chloride (chloroethyle				1.37E-08			1.37E-08		1.37E-08	
Xylenes (isomers and mixtur				2.41E-06					2.41E-06	
Total			7.81E-06	7.52E-06	4.14E-06	4.14E-06	9.30E-03	7.81E-06	7.52E-06	

6b. Hazard Index Chronic

HIC = [Q(ton/yr) * (X/Q) * MET * MP] / Chronic REL

	HIC - Residential												
Compound	AL	BN	CV	DEV	END	EYE	HEM	IMM	KID	NS	REP	RESP	SKIN
Benzene (including benzene				1.10E-05			1.10E-05			1.10E-05			
Carbon disulfide										1.09E-08	1.09E-08		
Dichlorobenzene, p- (or 1,4-	8.33E-06								8.33E-06	8.33E-06		8.33E-06	
Ethyl benzene	1.56E-06			1.56E-06	1.56E-06				1.56E-06				
Hydrogen sulfide												4.69E-03	
Methylene chloride(Dichlorc			2.54E-07							2.54E-07			
Perchloroethylene (or tetrach	9.86E-05								9.86E-05				
Toluene (methyl benzene)				5.42E-05						5.42E-05		5.42E-05	
Trichloroethylene						4.45E-06		4.45E-06				4.45E-06	
Vinyl chloride (chloroethylet													
Xylenes (isomers and mixtur										9.10E-06		9.10E-06	
Total	1.09E-04		2.54E-07	6.67E-05	1.56E-06	4.45E-06	1.10E-05	4.45E-06	1.09E-04	8.29E-05	1.09E-08	4.76E-03	

A/N: 491468 Date: 11/06/08

	HIC - Commercial												
Compound	AL	BN	CV	DEV	END	EYE	HEM	IMM	KID	NS	REP	RESP	SKIN
Benzene (including benzene				7.30E-06			7.30E-06			7.30E-06			
Carbon disulfide										7.24E-09	7.24E-09		
Dichlorobenzene, p- (or 1,4-	5.53E-06								5.53E-06	5.53E-06		5.53E-06	
Ethyl benzene	1.04E-06			1.04E-06	1.04E-06				1.04E-06				
Hydrogen sulfide												3.11E-03	
Methylene chloride(Dichlorc			1.68E-07							1.68E-07			
Perchloroethylene (or tetrach	6.55E-05								6.55E-05				
Toluene (methyl benzene)				3.60E-05						3.60E-05		3.60E-05	
Trichloroethylene						2.96E-06		2.96E-06				2.96E-06	
Vinyl chloride (chloroethyle													
Xylenes (isomers and mixtur										6.05E-06		6.05E-06	
Total	7.21E-05		1.68E-07	4.43E-05	1.04E-06	2.96E-06	7.30E-06	2.96E-06	7.21E-05	5.51E-05	7.24E-09	3.16E-03	

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

11/6/2008

TERRY AHN
ORANGE COUNTY SANITATION DISTRICT
P O BOX 8127
FOUNTAIN VALLEY, CA 92728

Facility ID: 17301
Located at: 10844 ELLIS AVE, FOUNTAIN VALLEY

Thank you for filing your application(s) with the South Coast Air Quality Management District (AQMD).

The application number(s) assigned by AQMD to your application package(s) is/are on Page 2 of this letter. Please refer to the information on Page 2 when contacting AQMD for assistance. The information you submitted with your application(s) or in your latest submittal is complete to the extent that allows us to begin processing of your application(s), however some clarifying data may still be needed. The acceptance of your application(s) does not imply that permit(s) has/have been approved. The engineer assigned to process your application(s), as indicated below, may contact you if additional information is required.

If you have any question or need additional information about your application(s), please contact the engineer listed below:

Engineer: Gaurang Rawal **Telephone:** (909) 396 - 2543

For general information about AQMD's permitting process, please call (909) 396-2468.

cc: Application file(s)

AQMD PERMIT APPLICATION INFORMATION

(Please refer to this information when contacting AQMD for Assistance)

11/6/2008

Facility ID: 17301

Application Number (s)	Equipment Description
491468	UNSPECIFIED EQUIP/PROCESS (SCH C) Fuel cell Energy station & H_2 Recovery unit (Research Permit)

Notice of Exemption

Form D

To: ☒ Office of Planning and Research
PO Box 3044,
1400 Tenth Street, Room 222
Sacramento, CA 95812-3044

☒ County Clerk
County of Orange
12 Civic Center Plaza,
PO Box 238
Santa Ana, CA 92701-0238

From: Orange County Sanitation District
10844 Ellis Avenue
Fountain Valley, CA 92708

FILED
MAY 05 2008
TOM DALY, CLERK-RECORDER
By _____ DEPUTY

3dl924

Project Title: PROJECT NO. SP-134 Fuel Cell Hydrogen Gas Generation Research

Project Location (Specific): OCSD Reclamation Plant No. 1, 10844 Ellis Avenue Fountain Valley, CA

Project Location (City): Fountain Valley **Project Location (County):** Orange

Description of Project: This is a collaborative project between UCI, California Department of Transportation, Air Products, and Fuel Cell Technologies to create hydrogen gas from OCSD's digester gas and provide a mobil hydrogen auto fueling station at Plant No.1. OCSD's portion of the larger project is for the installation of utilities and site preparation for the equipment at Plant No. 1.

Name of Public Agency Approving Project: Orange County Sanitation District
10844 Ellis Avenue, Fountain Valley, CA 92708

Name of Person or Agency Carrying Out Project: Orange County Sanitation District
10844 Ellis Avenue, Fountain Valley, CA 92708

POSTED
MAY 05 2008
TOM DALY, CLERK-RECORDER
By _____ DEPUTY

Exempt Status: (Check One)

☐ Ministerial (Sec. 21080(b)(1); 15268);

☐ Declared Emergency (Sec. 21080(b)(3); 15269(a));

☐ Emergency Project (Sec. 21080(b)(4); 15269(b)(c));

☒ Categorical Exemption. State type and section number: 15306

☐ Statutory Exemptions. State code number:

Reasons why project is exempt: This project is research which do not result in a serious or major disturbance to an environmental resource.

Lead Agency Contact Person: Jim Burror **Area Code / Telephone/Extension:** 714-593-7335

If filed by applicant:

1 Attach certified document of exemption finding.

2 Has a Notice of Exemption been filed by the public agency approving the project? YES ☐ NO ☐

Signature: _____ **Date:** 5/5/08 **Title:** Engineering Supervisor
Jim Burror, P.E.

☒ Signed by Lead Agency

☐ Signed by Applicant

Recorded in Official Records, Orange County
Tom Daly, Clerk-Recorder
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Supplemental Information

Temporary Fuel Cell Energy Station at Plant No. 1 (OCSD Job No. SP-134)

Project Overview

The proposed project involves the construction of a temporary Fuel Cell Energy Station at OCSD's Treatment Plant No.1. It will consist of the fuel cell system and the hydrogen recovery unit. The fuel cell will primarily be fueled with digester gas from the Plant No. 1's anaerobic digestion process to create electricity and excess Hydrogen (H_2) gas will be routed to the onsite hydrogen car fueling station. The natural gas or the mixture of digester and natural gases may also be used. The proposed Fuel Cell Energy Station will be installed at OCSD for a temporary demonstration period of six months to one year.

Project Background

The proposed project is a collaborative effort among the United States Department of Energy (DOE), California Air Resources Board (CARB), Air Products and Chemicals, Inc. (Air Products), and FuelCell Energy (FCE). Air Products has secured the funding from DOE and CARB to manufacture, install, operate, and eventually remove the temporary Fuel Cell Energy Station. In order to promote research into alternative sources of energy to reduce its overall energy costs while reducing air emissions, OCSD has entered into a contractual agreement with Air Products to provide digester gas and funding for site improvements and installation of utilities.

Process Description

The attached Figure 1 - Fuel Cell Energy Station Process Flow Diagram shows the overview of the proposed Fuel Cell Energy Station process as described below:

Fuel Cell System Process Overview

The fuel cell system, provided by FuelCell Energy, consists of fuel pretreatment skid, Direct FuelCell Powerplant (power plant), and anode exhaust skid. The power plant consists of three subsystem sections: Mechanical Balance of Plant (MBOP); Fuel Cell Module, and Electrical Balance of Plant (EBOP). The MBOP provides such functions as preheating of water and fuel, humidification of the fuel and supply of the air. The EBOP contains DC/AC converter, power metering, switching equipment and the voltage transformer.

Before the digester gas from the OCSD's anaerobic digestion process can be used in the Fuel Cell Module, it is first treated to remove contaminants such as siloxanes and

hydrogen sulfide in the fuel pre-treatment system which uses the activated carbon within a vessel. In MBOP, the cleaned digester gas and purified water are then simultaneously injected into the heat exchanger which takes heat from the cathode exhaust gas. The heated humid fuel is then routed to the preconverter vessel where any higher hydrocarbons are converted to methane to avoid depositing carbon on the fuel cell stacks.

The treated fuel then enters the Fuel Cell Module which is made up of cathode and anode electrodes which are porous nickel catalysts separated by the molten carbonate electrolyte. Methane in the fuel is internally reformed at the anode to form hydrogen and carbon dioxide (CO_2) via the following reaction:

$$CH_4 + 2H_2O \rightarrow 4\,H_2 + CO_2 \text{ (+ byproduct Carbon Monoxide - CO)}$$

The hydrogen gas is then stripped off of their electrons in the anode, and the electrons flow through an external circuit, producing DC power and then return to the cathode. The DC power from the Fuel Cell Module is converted to AC power in the EBOP of the fuel cell skid. The electrochemical reaction is shown below:

$$4H_2 + 4CO_3^{2-} \rightarrow 4H_2O + 4CO_2 + 8e^-$$

In the cathode, O_2 from the air supplied by MBOP and CO_2 recycled from the anode off-gas react with electrons to produce carbonate ions (CO_3^{2-}) as shown in the reaction below. The carbonate ions flow through the molten carbonate electrolyte to the fuel cell anode. This reaction generates heat which is used to heat incoming fuel and water in the MBOP.

$$2O_2 + 4CO_2 + 8e^- \rightarrow 4CO_3^{2-}$$

Hydrogen Recovery Unit Process Overview

The off-gas from the anode contains 10% H_2 (wet basis), CO byproduct, CO_2 and H_2O. This combination of gases is commonly called Syngas. The Syngas is sent to the anode exhaust kid where it is cooled by heating the return CO_2 and then increases the hydrogen content by reacting water and CO to produce H_2 and CO_2 via following water-gas-shift (Shift) reaction:

$$H_2O + CO \rightarrow H_2 + CO_2$$

This increases the H_2 concentration in the Syngas to 23% (dry basis). The Syngas is cooled further by preheating the air used in the fuel cell cathode and shifted the second time to maximize the hydrogen production. This shifted Syngas is then sent to the Hydrogen Purification Skid. The hydrogen purification is achieved by using the principle of pressure swing adsorption in order to separate the hydrogen from the other reformate

products. Carbon dioxide and other reformate products in the Syngas are adsorbed on the adsorbent beds at high pressure while the H_2 molecules pass through the bed un-adsorbed. The separation is achieved by selecting an adsorbent that has a much lower affinity for hydrogen as compared to the other reformate products. The hydrogen is then compressed for sent to the Hydrogen Fueling Station which is located near the Plant No. 1 entrance for use by the public.

The tail gas, which consists mostly of CO_2, H_2O and residual H_2,from the hydrogen purification process is sent to the cathode side of the Fuel Cell Module. As described above, the fuel cell cathode converts CO_2 to the energy carrier, CO_3^{2-} to complete the fuel cell circuit. Any excess CO_2 and water leave the cathode as exhaust.

Operating Schedule

The proposed Fuel Cell Energy Station will operate 24 hours per day, 7 days per week during the 6 month to 1 year demonstration period.

Project Location

The proposed Fuel Cell Energy Station will be located at Plant 1 as shown in Drawing No. G0003.

Project Schedule

The construction of the proposed Fuel Cell Energy Station is scheduled to begin in March 2009. The demonstration period is expected to begin in July 2009.

Fuel Cell Equipment Specification

The product specification sheet for the FuelCell Energy's Direct Fuel Cell 300 (DFC 300) is provided as an attachment.

Emissions Estimation

During normal operation, the only emissions release point of criteria pollutants and toxic air contaminants is the fuel cell exhaust stack located on the MBOP of the fuel cell skid as shown in Figure 2 – Fuel Cell Powerplant Layout. It is expected that there will be four start-ups of the fuel cell energy station in a year during which hydrogen gas will be emitted for about one hour. In addition, the venting from the PSA System will occur once a year during which mostly CO_2 and H_2 will be released through the Relief Vent as shown in Figure 1 - Fuel Cell Energy Station Process Flow Diagram.

Estimated Emissions of Criteria Pollutants

The estimated criteria pollutant emissions from the Fuel Cell Energy Station are presented in Table 1 below. The emissions for the digester gas fuel cell were calculated based on the following assumptions obtained from the fuel cell specification sheet:

- Criteria Pollutant Emissions for 300 kW Natural Gas Fuel Cell

	lbs/MWh
NOx	0.01
SOx	0.0001
PM10	0.00002
VOC	0.01
CO	0.1

- Fuel Flow: 39 scfm Natural Gas; 75 scfm Digester Gas
- 558 BTU/ft3
  (BTU value of digester gas is approx 60%of natural gas ? 930 BTU/ft3)
- 7260 BTU/KWh

Table 1: Summary of Criteria Pollutant Emissions from Fuel Cell Energy Station

	Fuel - Digester Gas	
	lbs/hr	**lbs/yr**
NOx	0.0035	306.60
SOx	0.00003	2.63
PM10	0.000007	0.61
VOC	0.003	262.80
CO	0.035	3066.00

Typo!
30.6
0.263
0.06
26.28
3066

Estimated Emissions of Toxic Air Contaminants (TAC)

The estimated TAC emissions from the Fuel Cell Energy Station are presented in Table 2, They represent the worst case scenario in that they are emissions from 75 scfm of digester gas prior to the fuel pre-treatment (carbon adsorber) skid. They are also below the SCAQMD Rule 1401 Risk Assessment Tier 1 Screening Levels; therefore, no further health risk analysis was conducted.

Table 2. Summary of TAC Emissions from Fuel Cell Energy Station

Compound	Conc. (ppm)	MW	Uncontrolled Emissions (lbs/yr)	Uncontrolled Emissions (lbs/hr)	Tier I Screening Level 100 Meter (lbs/yr)	Tier I Screening Level 100 Meter (lbs/hr)
Benzene	0.184	78.1	1.58	1.80E-04	8.92	3.96
Carbon Disulfide	0.0025	76.1	0.02	2.38E-06	207,000	18.9
Carbon Tetrachloride	0	153.24	0	0	5.95	5.78
Chlorobenzene	0	112.56	0	0	258,000	n/a
Chloroform	0	119.38	0	0	47	0.456
1,4(p)-Dichlorobenzene	0.988	147	15.94	0.00	22.3	n/a
Ethyl Benzene	0.642	106.16	7.48	0.00	517,000	n/a
Ethylene Dichloride	0	98.96	0	0	12.4	n/a
Hydrogen Sulfide	30	34.08	112.23	1.28E-02	0.112	
Methyl Chloroform	0	133.42	0	0	258,000	182
Methylene Chloride	0.026	84.93	0.24	2.77E-05	255	37.5
MTBE	0	24.45	0	0	496	n/a
Stryene	0	104.16	0	0	233,000	56.2
Tetrachloroethylene	0.454	165.83	8.26	9.43E-04	42.5	53.5
Toulene	3.85	92.13	38.94	4.44E-03	77,500	99.1
Trichloroethylene	0.443	131.4	6.39	7.29E-04	127	n/a
Vinyl Chloride	0.103	62.5	0.71	8.07E-05	3.3	482
Vinylidene Chloride	0	96.94	0	0	n/a	n/a
Xylenes	1.308	106.16	15.24	1.74E-03	181,000	58.9

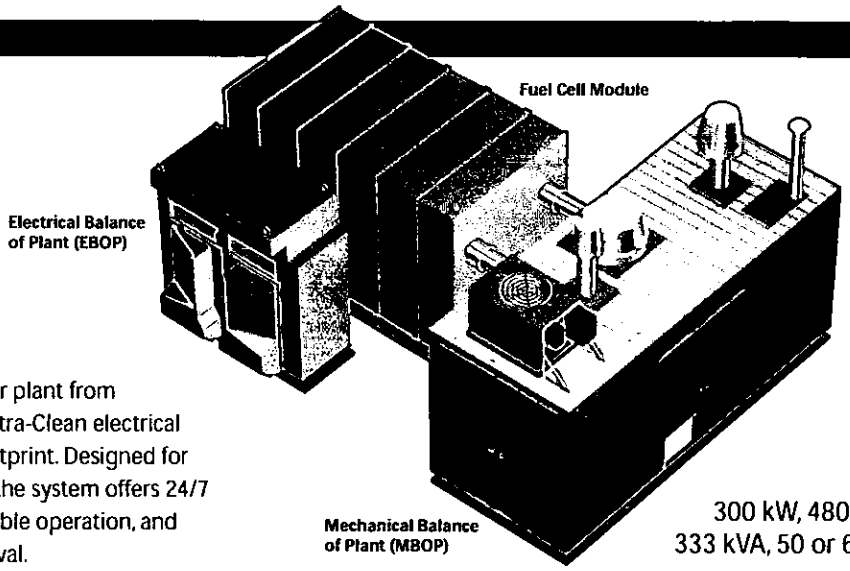
FuelCell Energy

Ultra-Clean, Efficient, Reliable Power

DFC300

Key Features

- High Efficiency
- Low Environmental Impact
- Fuel Flexibility
- High Reliability
- Quiet Operation



300 kW, 480 VAC,
333 kVA, 50 or 60 Hz

Advantages

The DFC®300™ stationary fuel cell power plant from FuelCell Energy provides high-quality, Ultra-Clean electrical power with 47% efficiency in a small footprint. Designed for commercial and industrial applications, the system offers 24/7 operation, easy transport, quiet and reliable operation, and easy site planning and regulatory approval.

Performance

Power Output	
Power @ Plant Rating	300 kW
Standard Output AC Voltage	480 V
Standard Frequency	60 Hz
Optional Output AC Voltages	460, 440, 420, 400, 380 V
Optional Output Frequency	50 Hz

Efficiency	
LHV	47 +/- 2 %

Available Heat	
Exhaust Temperature	700 +/- 50 °F
Exhaust Flow	3,950 lb/h
Allowable Backpressure	5 iwc
Heat Energy Available for Recovery	
(to 250°F)	480,000 Btu/h
(to 120°F)	808,000 Btu/h

Fuel Consumption	
Natural gas (at 930 Btu/ft³)	39 scfm
Heat rate, LHV	7,260 Btu/kWh

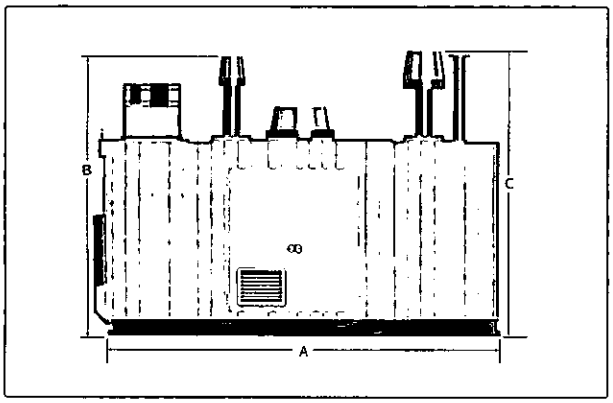
Water Consumption	
Average	0.9 gpm
Peak during WTS backflush	10 gpm

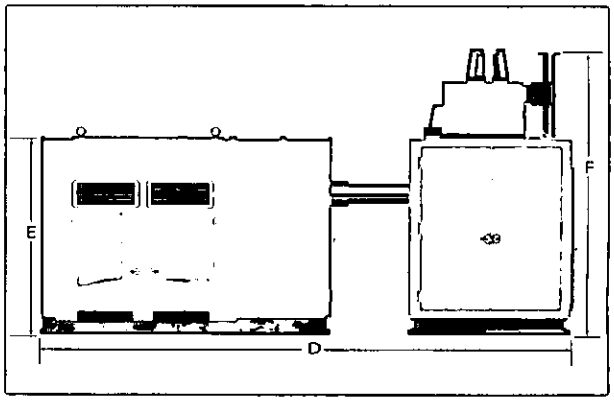
Water Discharge	
Average	0.45 gpm
Peak during WTS backflush	10 gpm

Pollutant Emissions	
NOx	0.01 lb/MWh
SOx	0.0001 lb/MWh
PM10	0.00002 lb/MWh

Greenhouse Gas Emissions	
CO_2	980 lb/MWh
CO_2 (with waste heat recovery)	520-680 lb/MWh

Specifications





Dimensions

Front View

A	Overall Width	20.0 ft
B	Height of Air Intake Filter	15.1 ft
C	Height of Exhaust Stack (Required on units with no heat recovery)	14.5 ft

Side View

D	Overall Length	28.0 ft
E	Height of EBOP	11.8 ft
F	Height of Discharge Vent	14.5 ft

Weights

Mechanical Balance of Plant	27,000 lb
Electrical Balance of Plant	15,000 lb
Fuel Cell Module	35,000 lb

Noise Level

Standard	72 dB(A) at 10 feet
Optional	65 dB(A) at 10 feet

Experience & Capabilities

With more than 35 years of experience, FuelCell Energy is recognized as a world leader in the development, manufacture, and commercialization of fuel cells for stationary electric power generation. The result of years of research and the investment of more than $530 million, our patented, carbonate Direct FuelCell products have generated more than 200 million kilowatt hours of electrical energy to date at more than 50 locations worldwide.

FuelCell Energy's fleet of Direct FuelCell power plants are certified to or comply with a variety of commercial and industrial standards: ANSI/CSA America FC-1, UL 1741, CARB 2007, OSHA 29 CFR Part 1910, IEEE 1547, NFPA 70, NFPA 853, and California Rule 21.

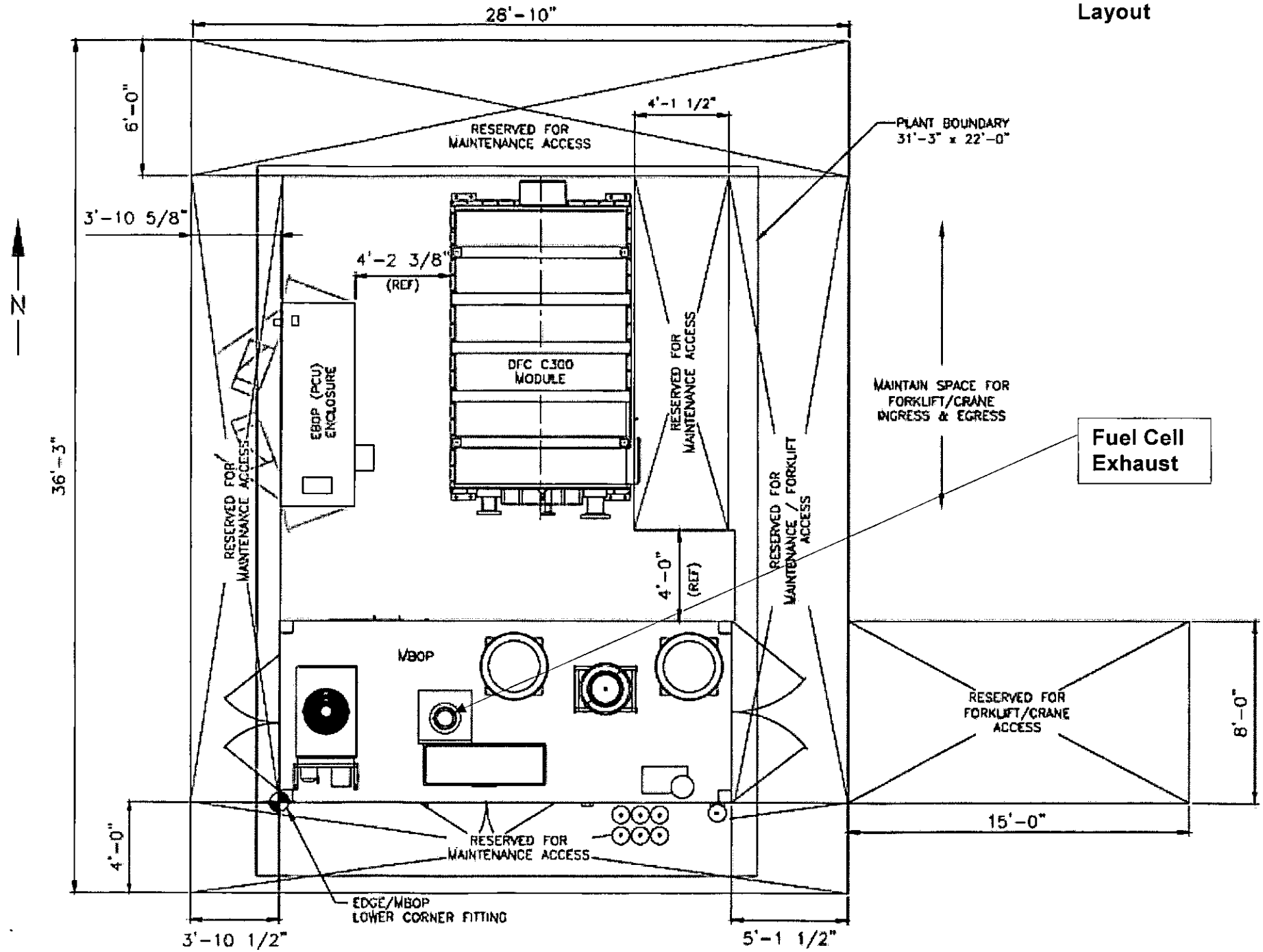
FuelCell Energy, Inc.
3 Great Pasture Road
Danbury, CT 06813-1305
203 825-6000

www.fuelcellenergy.com

FuelCell Energy

Ultra-Clean, Efficient, Reliable Power

Figure 2. Fuel Cell Powerplant Layout



cyclic, branched, or linear, completely fluorinated ethers with no unsaturations

cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations

sulfur-containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine.

(30) SOURCE means any grouping of equipment or other air contaminant-emitting activities which are located on parcels of land within the District, in actual physical contact or separated solely by a public roadway or other public right-of-way, and are owned or operated by the same person or by persons under common control. Such above-described groupings, if remotely located and connected only by land carrying a pipeline, shall not be considered one stationary source. (Under RECLAIM, a SOURCE is any individual unit, piece of equipment or process which may emit an air contaminant and which is identified, or required to be identified, in the RECLAIM Facility Permit)

(31) STREAMLINED STANDARD PERMIT means a permit issued for certain types of equipment or processes commonly permitted by AQMD with pre-set levels of controls and emissions. The operating conditions and other qualifying criteria are pre-determined by the AQMD and provided to the permit applicant in the permit application package for concurrence.

(32) STATEWIDE EQUIPMENT is equipment with a valid registration certificate issued by CARB for the Statewide Portable Equipment Registration Program.

(33) TEMPORARY PERMIT TO OPERATE represents interim authorization to operate equipment until the Permit to Operate is granted or denied. A temporary Permit to Operate is not issued by the District but may exist pursuant to Rule 202.

(c) Fees for Permit Processing

(1) Permit Processing Fee

(A) Permit Processing Fee Applicability

Except as otherwise provided in this rule, every applicant who files an application for a Permit to Construct, Permit to Operate, Facility Permit, court judgments in favor of the District and

administrative civil penalties or a revision to a Facility Permit, shall, at the time of filing, pay all delinquent fees associated with the facility and shall pay a permit processing fee.

(i) Except as otherwise provided in this paragraph, the permit processing fee shall be determined in accordance with the schedules (set forth in the Summary Permit Fee Rates tables at the time the application is deemed complete.

(ii) A person applying for permits for relocation of equipment shall pay fees in accordance with the schedules set forth in the Summary Permit Fee Rates tables at the time the application is deemed complete. All fees due, within the past 3 years, from the previous facility for equipment for which a Change of Location application is filed, and all facility-specific fees (such as "Hot Spots" fees), must be paid before the Change of Location application is accepted.

(iii) A person applying for permits for any equipment/process not otherwise listed in Table I shall pay the fees associated with Schedule C. Prior to the issuance of a permit, these fees are subject to adjustment, as necessary.

(iv) For applications submitted prior to July 1, 1990, the applicant shall pay a permit processing fee as specified in the Summary Permit Fee Rates tables, less any previously paid filing fees not to exceed the amount due. These fees are due and payable within thirty (30) days of receipt of notification.

(v) In the event a Permit to Construct expires under the provisions of Rule 205, and the applicable rules, regulations, and BACT for that particular piece of equipment have not been amended since the original evaluation was performed, the permit processing fee for a subsequent application for a similar equipment shall be the fee established in the Summary Permit Fee Rates - Change of Operator table according to the applicable schedule under the Change of Operator category, provided the subsequent application is submitted within one (1) year

(2) Change of Operator/Location

If the owner/operator or the location of an emission source subject to Rule 222 changes, the current owner/operator must file a new application for Rule 222 and pay to the District an initial non-refundable non-transferable filing and processing fee of $135.30 for FY 06-07, $148.83 for FY 07-08 and $163.71 for FY 08-09 for each emission source.

(3) Annual Renewal Fee

On an annual re-filing date set by the Executive Officer the owner/operator of a source subject to Rule 222 shall pay a renewal fee of 135.30 for FY 06-07, $148.83 for FY 07-08 and $163.71 for FY 08-09 (except for non-retrofitted boilers). At least thirty (30) days before such annual re-filing date, all owners/operators of emission sources subject to Rule 222 will be notified by either electronic or regular mail of the amount to be paid and the due date for the annual re-filing fee.

(4) Notification of Expiration

If the annual re-filing fee is not paid within thirty (30) days after the due date, the filing will expire and no longer be valid. In such case, the owner/operator will be notified by either electronic or regular mail of the expiration and the consequences of operating equipment without a valid Rule 222 filing.

(5) Reinstating Expired Filings

To re-establish expired filings, the owner/operator of a source subject to Rule 222 shall pay a reinstatement fee of fifty percent (50%) of the amount of fees due per emission source. Payment of all overdue fees shall be made in addition to the reinstatement surcharge. Payment of such fees shall be made within one year of the date of expiration. If the period of expiration has exceeded one year or the affected equipment has been altered, the owner/operator of an emission source subject to Rule 222 shall file a new application and pay all overdue fees.

(u) Fees for Expedited Processing Requests

An applicant has the option to request expedited processing for an application for a permit, CEQA work, an application for an ERC/STC, Air Dispersion Modeling, HRA, Source Test Protocols and Report Fees. A request for expedited processing pursuant to this section shall be made upon initial application submittal. Expedited processing is intended to be performed by

District Staff strictly during overtime work. Approval of such a request is contingent upon the District having necessary procedures in place to implement an expedited processing program and having available qualified staff for overtime work to perform the processing requested. The applicant shall be notified whether or not the request for expedited processing has been accepted within 30 days of submittal of the request. If the request for expedited processing is not accepted by the District, the additional fee paid for expedited processing will be refunded to the applicant.

(1) Permit Processing Fee

Fees for requested expedited processing of permit applications will be an additional fee of fifty percent (50%) of the applicable base permit processing fee (after taking any discounts for identical equipment but not the higher fee for operating without a permit) by equipment schedule. For schedule F and higher, expedited processing fees will include an additional hourly fee when the processing time exceeds times as indicated in column 1 below; but not to exceed the total amounts in column 4, based on the applicable schedule as follows:

Processing Time Exceeding	Schedule	Added Base Hourly Fee $	Maximum Added Base Cap Fee $
		FY 06-07	
99 hours	F	$166.24	$31,247.52
117 hours	G	$166.24	$53,534.33
182 hours	H	$166.24	$68,068.79
		FY 07-08	
99 hours	F	$182.87	$34,372.28
117 hours	G	$182.87	$58,887.76
182 hours	H	$182.87	$74,875.67
		FY 08-09	
99 hours	F	$201.15	$37,809.50
117 hours	G	$201.15	$64,776.54
182 hours	H	$201.15	$82,363.24

FY 08-09

Schedule	Permit Processing Fee	Change of Condition	Alteration/ Modification
A	$1,287.22	$670.49	$1,287.22
A1	$1,287.22	$670.49	$1,287.22
B	$2,051.52	$1,016.31	$2,051.52
B1	$3,244.91	$1,758.90	$3,244.91
C	$3,244.91	$1,758.90	$3,244.91
D	$4,478.51	$3,008.18	$4,478.51
E	$5,148.93	$4,416.74	$5,148.93
F	$12,939.58+T&M,	$6,448.14	$10,257.62+T&M
G	$15,272.72+T&M	$10,942.07*	$12,590.75+T&M
H	$23,666.52+T&M	$13,873.64*	$20,984.56+T&M

F: T&M = Time and Material charged at $134.10 per hour above 99hours; not to exceed $25,206.34
G: T&M = Time and Material charged at $134.10 per hour above 117hours; not to exceed $43,184.35
H: T&M = Time and Material charged at $134.10 per hour above 182hours; not to exceed $54,908.82
*** Correction: revised fees correct a typographical error to reflect the actual Board approved *10%* fee increase for FY 08-09**

SUMMARY OF ERC PROCESSING RATES, BANKING, CHANGE OF TITLE, ALTERATION/MODIFICATION, and CONVERSION TO SHORT TERM CREDITS

Schedule	Banking Application	Change of Title	Alteration/ Modification	Conversion to Short Term Credits	Re-issuance of Short Term Credits
FY 06-07 I	$2745.06	$484.90	$484.90	$484.90	$484.90
FY 07-08 I	$3,019.57	$533.39	$533.39	$533.39	$533.39
FY 08-09 I	$3,321.52	$586.73	$586.73	$586.73	$586.73

ORANGE COUNTY SANITATION DISTRICT

10844 Ellis Avenue
Fountain Valley, CA
92708-7018

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Placentia
Santa Ana
Seal Beach
Stanton
Tustin
Villa Park
Yorba Linda
Costa Mesa Sanitary District
Midway City Sanitary District
Irvine Ranch Water District
County of Orange

October 23, 2008

Permit Services
South Coast Air Quality Management District
21865 E. Copley Drive
Diamond Bar, CA 91765-4182

Subject: Experimental Research Permit Application to Install Fuel Cell Energy Station at OCSD's Plant No. 1 (OCSD Job NO. SP-134)

The purpose of this letter is to submit an experimental research permit application for installation of temporary Fuel Cell Energy Station at Orange County Sanitation District's Wastewater Treatment Plant No. 1.

The proposed temporary Fuel Cell Energy Station will consist of the fuel cell system and the hydrogen recovery unit. The fuel cell will primarily be fueled with digester gas from the Plant No. 1's anaerobic digestion process to create electricity and excess Hydrogen (H_2) gas will be routed to the onsite hydrogen car fueling station. Once the installation is completed, the Fuel Cell Energy Station will be operated for a demonstration period of six months to one year.

Enclosed with this letter are:

- (1) SCAQMD Form 400-A
- (1) SCAQMD Form 400-CEQA with Notice of Exemption
- (1) SCAQMD Form 400-PS
- (1) SCAQMD Form 400-XPP
- Supplemental Information
- Check for the permit processing fee in the amount of $4,867.37

If you have any questions or require further information, please contact Terry Ahn at (714) 593-7082 or tahn@ocsd.com.

Michael D. Moore
Manager
MM/TA/jb
H:\dept\ts\620\ahn\Permitting Projects\Fuel Cell\Permit_Pkg\FuelCell_Appl_Cvr.doc

Enclosure(s)

c: V. Kogan
Charlie Tupac (SCAQMD)
Gaurang Rawal (SCAQMD)

ORANGE COUNTY
SANITATION DISTRICT
POST OFFICE BOX 8127
FOUNTAIN VALLEY, CA 92728-8127
WWW.OCSD.COM

SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765

ORANGE COUNTY SANITATION DISTRICT

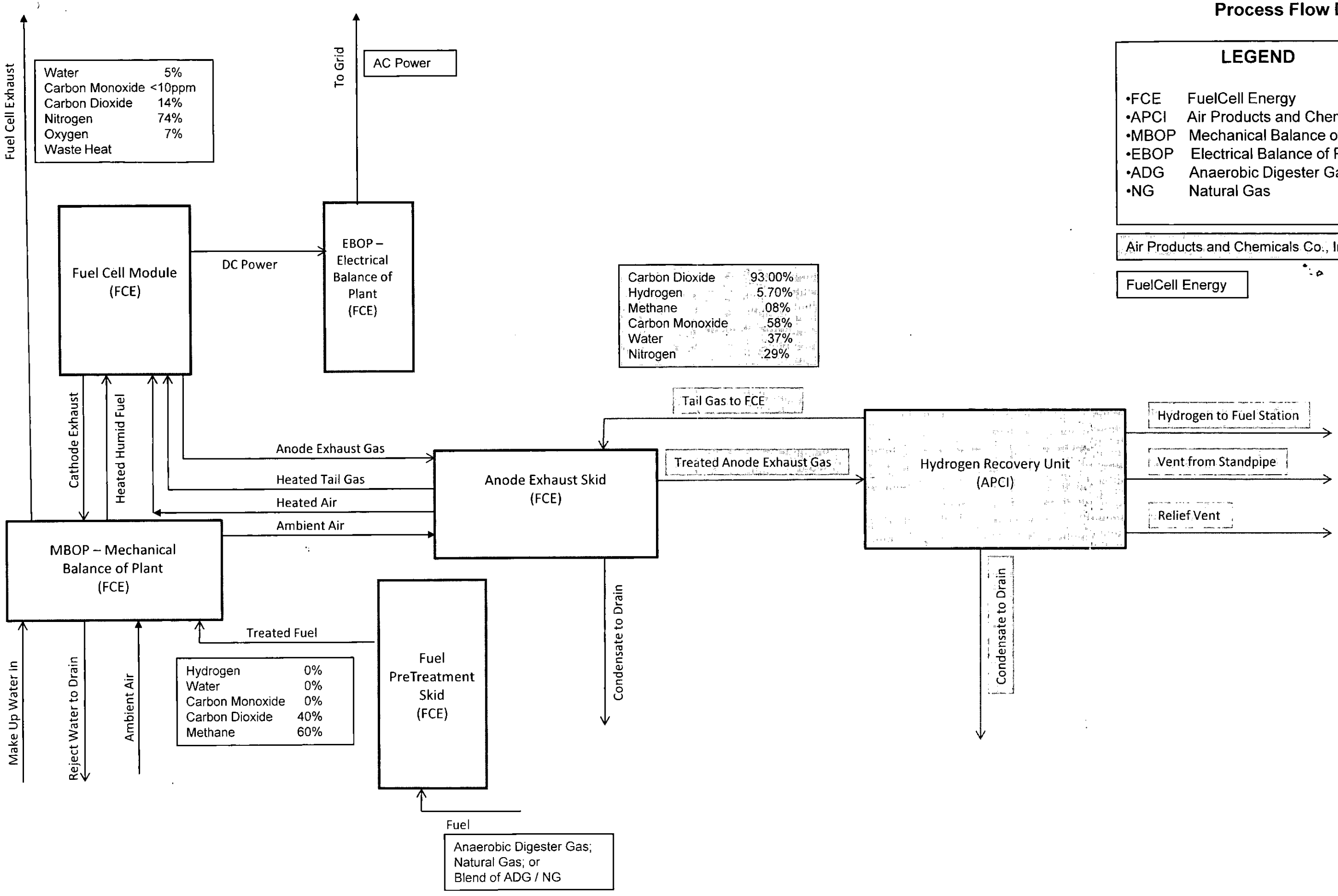
10844 Ellis Avenue, P.O. Box 8127
Fountain Valley, CA 92728-8127
(714) 962-2411

VENDOR NO. 83926 DATE: 10/29/08 CHECK NO. 1000015703

VENDOR NAME SOUTH COAST AQMD

INVOICE NO.	INVOICE DATE	DESCRIPTION	GROSS AMOUNT	DISC. - ADJ.	PAYMENT AMOUNT
PERMIT FEE - SP-134	10/23/08	Job# SP-134	4,867.37		4,867.37
				AMOUNT - U.S. DOLLARS	$*****4,867.37

Figure 1. Fuel Cell Energy Station Process Flow Diagram



PRIMARY COVERED STORAGE
POLYMER FACILITIES
POWER BLDG. 4
FOUL AIR SCRUBBERS
PRIMARY SEDIMENTATION BASINS No. 1 & 2
PRIMARY SED. BASIN No. 5
CENTRAL POWER GENERATION BLDG.
VER G No.7
1"=40'
POWER BLDG No.8
FLARES
POWER BLDG. 5
GAS COMP. BLDG.
DIGESTER No. 15
DIGESTER No. 12
DIGESTER No. 14
DIGESTER No. 11
DIGESTER No. 13
DIGESTER No. 10
DIGESTER No. 6
DIGESTER No. 5
DIGESTER No. 8
DIGESTER No. 7
DIGESTER No. 9
BELT PRESS BLDG. C
CAKE TRANS. C
TRICKLING FILTER No. 4
TRICKLING FILTER No. 1
TRICKLING FILTER No. 3
TRICKLING FILTER No. 2
PROJECT SITE
RECIRCULATION PUMP STATION INFLUENCE STRUCTURE
FILTRATE PUMP STATION
VALVE VAULT
BELT PRESS BLDG. M
CAKE TRANS. M
POWER BLDG. No. 2A
BLOWER BLDG.
EAST PERIMETER ROAD
SANTA ANA RIVER CHANNEL

DWG: J:\SP-134\WIP\CAD\SN-HOUSE\SP-134-G0003.dwg USER: tronh
DATE: Oct 08, 2008 11:11am XREFS: SP-134-GDBDR PLOTDT-C-SITE01

MARK	DESCRIPTION	DATE	APPR.
A	APPLIED FOR PERMIT	10/08	CM

DESIGNED BY: MS - 10/08
DRAWN BY: HT - 10/08
CHECKED BY: CM - 10/08
LINE IS 2 INCHES AT FULL SIZE
(IF NOT 2"-SCALE ACCORDINGLY)

ORANGE COUNTY SANITATION DISTRICT

FUEL CELL HYDROGEN GAS GENERATION RESEARCH

PROJECT SITE PLAN

PROJECT NO. SP-134

DRAWING NO. G0003

3 OF 3